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ABSTRACT

This volume endeavors to provide comprehensive factual information on the Soviet system of education. Chapter 1 offers basic information on the Soviet Republics. Chapter 2 describes the foundations of Soviet Education. Chapter 3 describes preschool through upper secondary education including academic calendars and curriculum. Chapter 4, "Vocational, Specialized and Technical Education" includes colleges, and bridge programs. Chapter 5, "Higher Education," examines history; governance; institutional structure and types; access; university, polytechnic and institute programs; research institutes; research at universities, polytechnics and pedagogical institutes; and libraries. Chapter 6, "The Arts," describes education in architecture, fine arts, and music. Chapter 7, "Health Professions," includes dentistry, medicine, paramedical education, nursing, and physical therapy. Chapter 7, "Teacher Training," covers teacher status, teacher training institutions, pedagogical readings, and reforms in teacher training. Chapter 9, "Other Forms of Education," describes adult education, free and open universities, Patrice Lumumba People's Friendship University, private and religious schools, and military education. Chapter 10 contains guidance for admissions officers in the United States on changes since 1985, academic credentials, translations, authenticity of documents, and English language testing (TOEFL). Appendixes contain information on the grading system, specialties offered at some institutions, sample credentials, and useful addresses. A glossary, index and bibliography are included. (Contains 20 references.) (JB)

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The Soviet System of Education

A PIER World Education Series
Special Report

by

Erika Popovych
World Education Services, New York

Brian Levin-Stankevich
Florida Atlantic University

1992

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THE SOVIET SYSTEM OF EDUCATION

1992

by

ERIKA POPOVYCH
World Education Services
New York

BRIAN LEVIN-STANKEVICH
Florida Atlantic University

A PIER World Education Series Special Report

American Association of Collegiate Registrars and Admissions Officers
and
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PREFACE

In a radical 1969 essay, then Soviet dissident Andrei Amalrik portrayed himself as a member of a small but growing"democratic movement." In his essay, he answered the question, "Will the Soviet Union survive until 1984?" His answer was a resounding negative, as he foretold of growing dissatisfaction with Soviet rule, the "democratic opposition," external events which would lead to the reunification of Germany and the democratization of Eastern Europe. Erring only in citing war between China and the USSR as the catalyst for radical change (perhaps we might substitute the extended conflict in Afghanistan and the tragedy of Chernobil), Amalrik noted the centrifugal forces at work in the multinational USSR. He foresaw open nationalistic defiance of Moscow coming first from the Baltics, the Caucasus (Armenia, Georgia and Azerbaidzhan) and Ukraine, the peaceful granting of independence to most of those former republics and even the appearance of violent clashes within and between the new states as ancient animosities resurfaced.[1]

All this and more has come to pass since we completed our country visit and wrote the text of this book addressing the educational system of the then Soviet republics. To incorporate all of the changes of the past year throughout the text would necessitate a thorough rewriting with very little benefit, for we set out to describe a cohesive "soviet" educational system as it existed before the transformation of the "soviet" nation. Knowing that much would be *passe* before the book appeared, we have tried to provide a snapshot of the educational system that produced the credentials we will continue to evaluate for years to come. We have no doubt that the need for a new study of the educational systems of the countries of this territory will be necessary all too soon.

The changes over the past year have occurred swiftly. The parliamentary debates over land reform which filled the airwaves in December 1990 gave way to open defiance in the Baltics, Moldavia, Georgia and Armenia. Independence movements spread through all of the former republics. The abortive coup of August 1991 marked the end of the USSR. Gorbachev tried to create a federation and the parliament tried to save a role for itself. In the end, the principle of self-determination, a rallying cry for Lenin and the Bolsheviks during the Russian Revolution of 1917, proved to be the rallying cry of those who caused Lenin's state to crumble. What manner of unity will survive in these territories is yet to be determined.

Despite the political upheavals, the educational systems have remained relatively unchanged. The most radical events have occurred in the Baltics with the founding of new universities and experiments in new educational organization. Institutional autonomy is evident in the activities of so many universities and institutes establishing ties to western universities and creating new programs, particularly in business and management. The curriculum is undergoing critique and reform in each state as the dominance of Russia is supplanted by more local forms of national consciousness. Names of institutions, as of cities and streets, are changing rapidly. In Russia, Armenia, Azerbaijan, Georgia, Kirghizia, Tadzhikistan and the Ukraine, for example, new names have replaced the old names almost overnight:[2]

Russia		
	Andropov	Rybinsk
	Brezhnev	Naberezhnye Chelny
	Chernenko	Sharypovo
	Georgiu-Dezh	Liski
	Kirov	Vyatka
	Kuibyshev	Samara
	Leningrad	St. Petersburg
	Sverdlovsk	Yekaterinburg
	Ustinov	Izhevsk
Armenia		
	Leninakan	Kumayri
Azerbaijan		
	Kirovabad	Gyandzha
Georgia		
	Gegechkori	Martvili
	Ordzhonikidze	Kharagouli
	Makharadze	Ozurgeti
	Mayakovsky	Bagdadi

	Tsakhaya	Senaki
	Tsulukidze	Khoni
Kirghizia		**Kyrgyzstan**
	Rybachye	Issyk-Kul
Tadzhikistan		**Tajikistan**
	Leninabad	Khodzhent
Ukraine		
	Voroshilovgrad	Lugansk
	Zhdanov	Mariupol

Educational authority, formerly centralized, has become the preserve of the new independent states. What is now called the Commonwealth of Independent States has no unified educational superstructure. Efforts are being made to consolidate the new regional educational systems and to establish systems of "accreditation" and quality control over the different types of institutions formerly controlled through a number of centralized governmental ministries.

This special report is designed for the specialized use of college and university admissions officers. In view of its rather narrow mission, this study does not attempt to give an in-depth analysis of the historical, sociological, or political developments in Soviet education, except as it is pertinent to the scope of the text. Instead, it endeavors to provide factual information on the Soviet system of education.

For the admissions and evaluation professional, the degree to which institutional autonomy evolves will be significant. The uniformity of credentials from the former USSR is being replaced by a variety of credential formats issued by individual institutions. Curricular reform will make familiar programs appear unfamiliar. But the openness of the new societies of this territory should improve access to credentials, however varied their appearance. A thorough examination of all of these changes will be useful only after each of the new states has formalized its educational organization and established the structure of its educational system

Brian Levin-Stankevich
Boca Raton, Florida

Erika I. Popovych
Albany, New York

January 1992

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[1] Andrei Amalrik. 1970. *Will the Soviet Union Survive Until 1984*? New York: Harper & Row.

[2] "The Names They Are A-Changin," *Time* (January 27, 1992), 36.

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The preparation of this report presented a major challenge. A great deal of work went into compiling preliminary data prior to an actual visit to the Soviet republics. Our three-week stay in Moscow, Leningrad, Kharkov, and Kiev in November-December 1990 was greatly facilitated by the assistance provided by the then State Committee for Public Education and all those designated to help us locate materials for our study. Just as we were interested in finding out about their system of education, they, in turn, wanted to fill in gaps in their knowledge about our system. It was far from easy to collect relevant data while the Soviet republics were undergoing far-reaching changes in all aspects of their political, economic, social, and educational life. Although there has been rapid change in the Soviet republics, both at the time of our visit and during the course of finishing this manuscript, the core of the educational framework is still in place and seems likely to remain so until all administrative and organizational changes take root.

Stateside, we owe our thanks to many people who were instrumental in this project, which included not only this publication but also an exchange of delegations to begin a dialogue among international educators. We are most grateful to the United States Information Agency's Office of Advising, Teaching, and Specialized Programs, which provided both financial support and logistical assistance. Jeanne-Marie Duval of the NAFSA Central Office worked tirelessly to finalize our itinerary. Dan Davidson, Executive Director of the American Council of Teachers of Russian (ACTR), and his Washington staff provided invaluable assistance, translating communications into proper Russian, making arrangements for our meetings, and providing essential advice and guidance. The staff at ACTR's Moscow office, too, "went the extra mile" to make our visit to Moscow a success.

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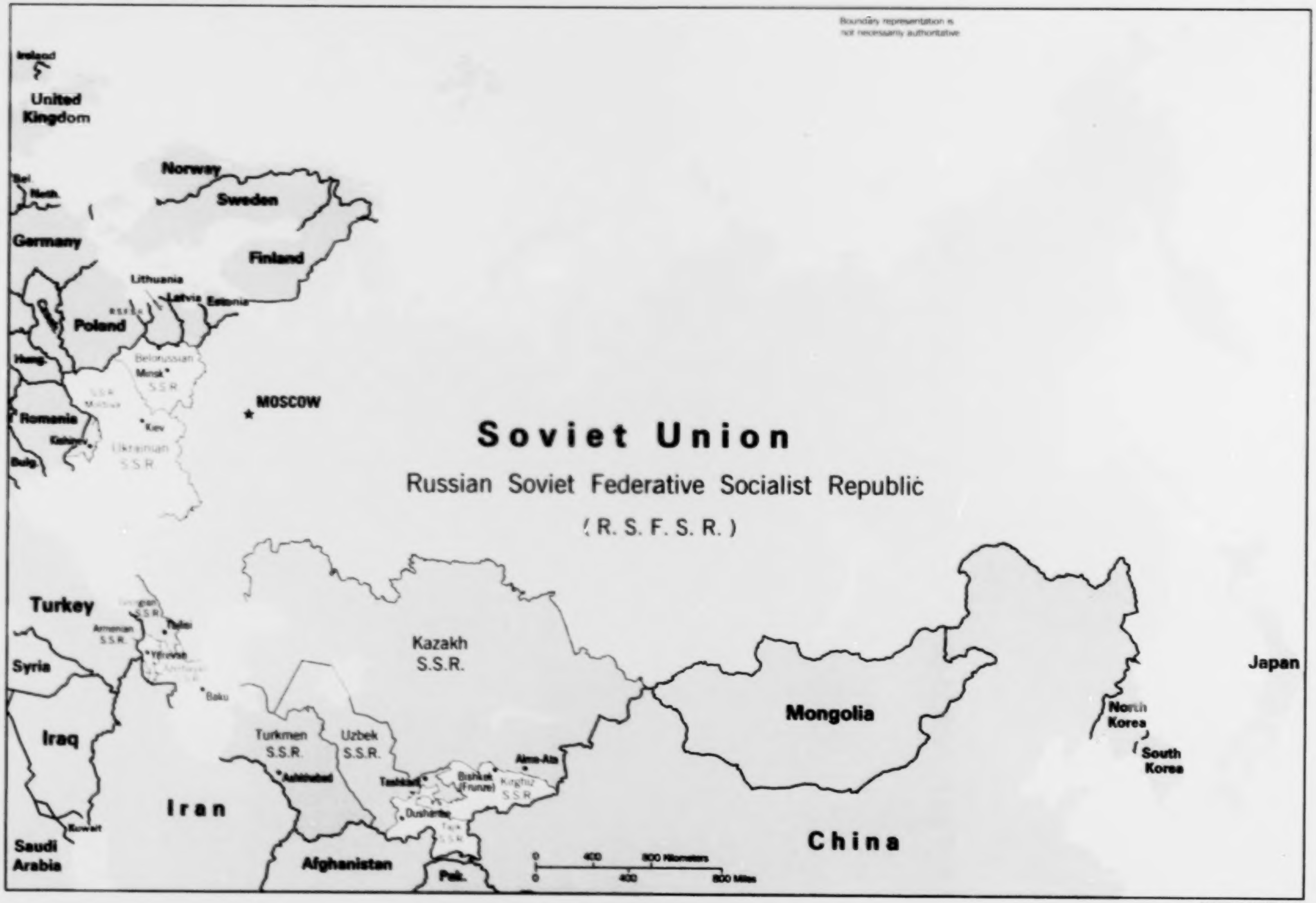
Brian Levin-Stankevich

Erika I. Popovych

Soviet Union Republics, September 1991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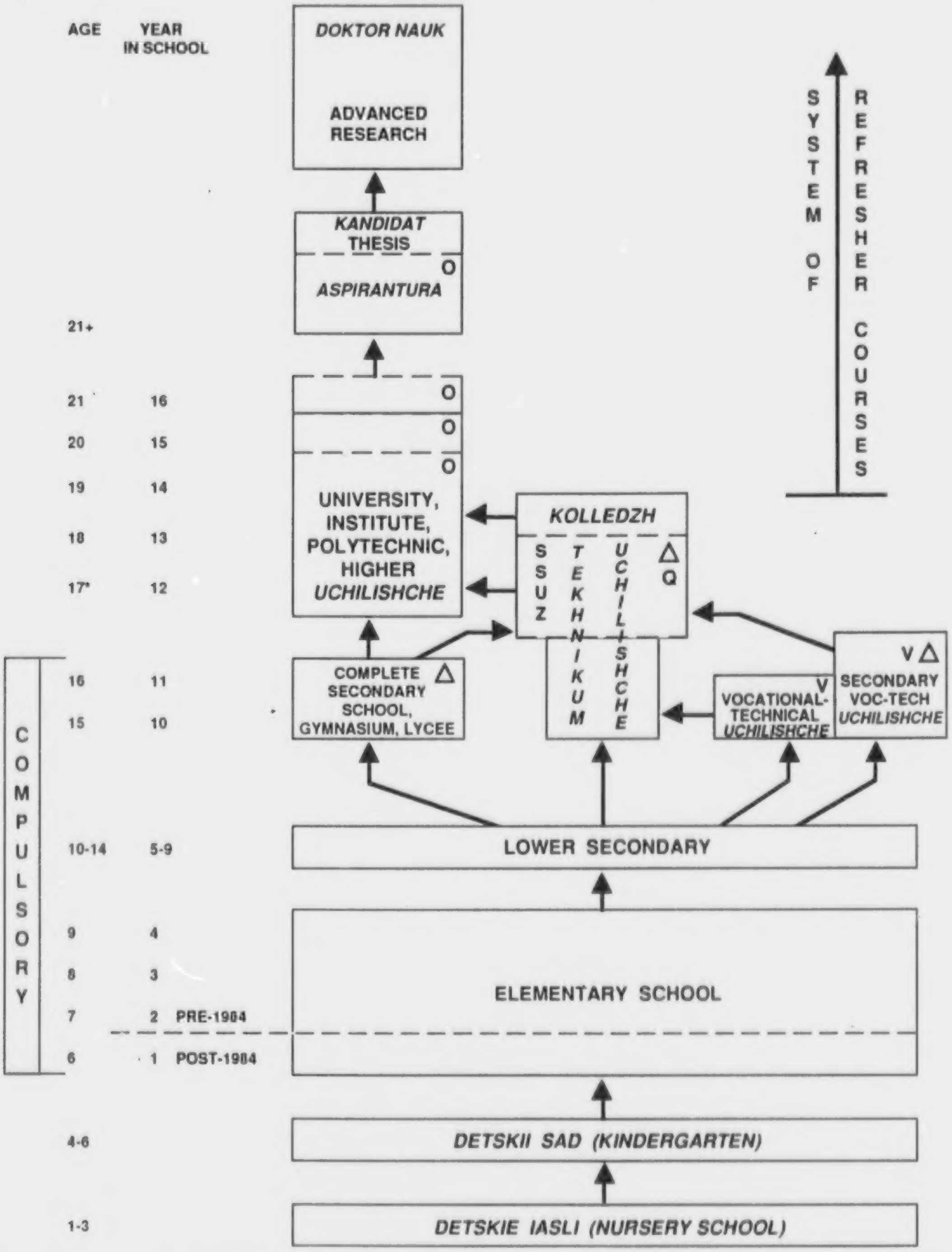
STRUCTURE OF THE SOVIET SYSTEM OF EDUCATION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* - VARIES DUE TO WORK EXPERIENCE REQUIREMENTS OR MILITARY SERVICE
O - STATE EXAMINATIONS
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I. FACTS ABOUT THE SOVIET REPUBLICS

Geography

The land area of the Soviet republics occupies more than one-seventh of the land surface of the globe, stretching from eastern Europe to the Pacific Ocean. Three climactic zones run east and west: the frozen, marshy tundra of the Arctic; the temperate forest belt; and the steppes of the south, which in southern Soviet Asia become sandy deserts.

Government*

Until the advent of restructuring *(perestroika)*, the Soviet socialist republics had a one-party system. The official ideology of Marxism-Leninism was written into the constitution of 1977. The constitution guarantees a number of social and economic rights, free education, and the possibility of receiving school instruction in the mother tongue. It also incorporates the government's obligation to provide secondary schooling for all.

Political power rested with the Central Committee of the Communist Party, chaired by the general secretary. The convening of the Nineteenth Party Conference, which was called into session late in June 1988, marked the beginning of the shift of power from the Communist party to the government. The political reforms debated at the Nineteenth Party Conference were adopted as constitutional changes by the parliament (Supreme Soviet). A two-tier parliament was created. The first tier is the Congress of the People's Deputies, which was elected in March 1989. It has 2,250 representatives from the 15 Soviet republics. The Soviet republics comprise one-third of the total number of delegates. The Congress elects the president by secret ballot. It meets as needed during the course of the year and sets overall economic and social policies. The 422-member Supreme Soviet represents the second tier of the government and meets on a more permanent basis. Its members are elected by the Congress for five-year terms. Judicial authority is vested in the Supreme Court.

The Soviet government presides over the world's largest multi-ethnic state. Politically, it is a federation of 15 nominally union republics with 20 autonomous republics and eight autonomous regions. Each union republic has the right to free secession from the USSR (Union of Soviet Socialist Republics), a guarantee that is enshrined both in the constitution of the USSR and in those of each union republic. Two of them, the Ukrainian and the Byelorussian SSR, are members of the United Nations both in their own right and as constituent parts of the USSR. Although the union republics have their own governments to date, central decisions are binding upon them. However, the concept of central control is being undermined by the growing political and economic independence of the republics under *perestroika*. Separatist movements are growing in the Ukraine, Moldavia, Armenia, Azerbaijan, Kaliningrad Oblast (formerly German East Prussia) and are already well documented in Lithuania, Latvia, and Estonia. Outlines of a federation concept are being discussed.

Of 290 million people, roughly half are Great Russians. The other 145 million – who will likely outnumber Russians soon because of a greater birth rate – are dispersed among the other republics. Other ethnic groups have been organized in a variety of autonomous republics or national regions. An estimated 25 million Russians can be found scattered among the non-Russians, and about 40 million nonRussians live outside their ethnic territories. The total population is divided as follows:

Union Republic	**Capital**	**Area sq. mi.**	**Pop. (1000's) 1986 est.**	**Principal Regional Language**
Armenia	Yerevan	11,506	3,343	Armenian
Azerbaijan	Baku	33,475	6,700	Azerbaijani
Byelorussia	Minsk	80,154	10,000	Byelorussian
Estonia	Tallin	17,413	1,542	Estonian
Georgia	Tbilisi	26,872	5,271	Georgian
Kazakhstan	Alma-Ata	1,064,092	16,000	Kazakh
Kirghizia	Frunze	76,641	4,000	Kirghiz
Latvia	Riga	24,595	2,600	Latvian
Lithuania	Vilnius	25,174	3,600	Lithuanian
Moldavia	Kishinev	13,012	4,100	Moldavian
Russia	Moscow	6,593,391	144,000	Russian
Tadzhikistan	Dushambe	55,019	4,600	Tadzhik
Turkmenistan	Ashkhabad	188,417	3,200	Turkmeni
Ukraine	Kiev	233,089	50,900	Ukrainian
Uzbekistan	Tashkent	158,069	18,500	Uzbek

Source: Almanac - Atlas & Yearbook 1989 (42nd ed.), Boston: Houghton Mifflin Co.

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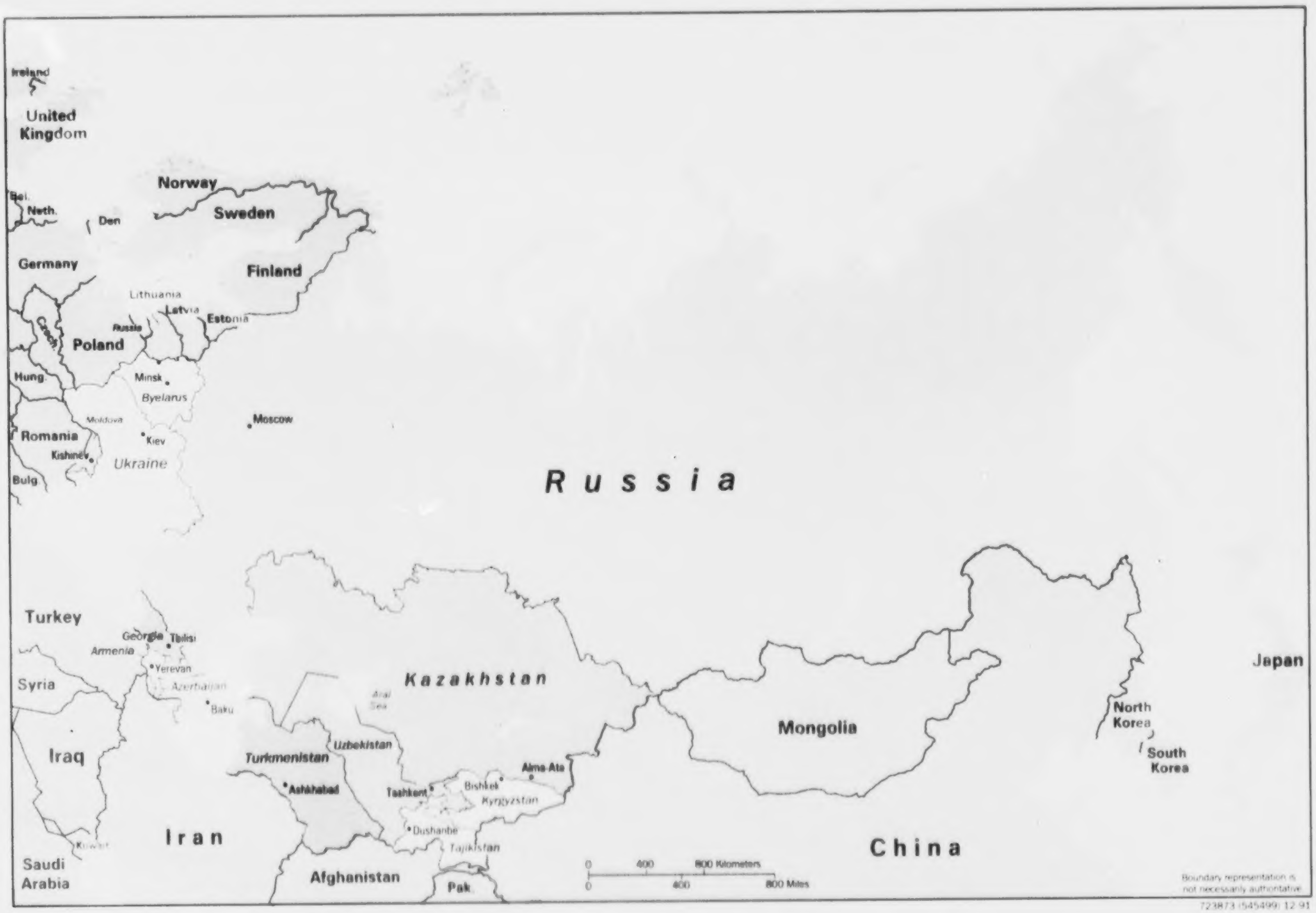
*The government structure, as outlined in this chapter, was in place before the attempted coup in August 1991. Subsequent declarations of independence by many republics and the actual granting of independence to Estonia, Latvia, Lithuania and others altered the central framework of the government.

Figures 1 is a map of the republics.

Languages

The Soviet system of government embraces about 130 nationalities with diverse cultures and traditions. Even though Russian is not legally the official language, it functions as the *lingua franca* throughout the area. In the climate of *perestroika* and the nationalist ferment in the republics, Russian is being promoted as the language of inter-ethnic communication. See page 4 for a transliteration of the Russian alphabet.

In national territories, there is provision for a "second mother tongue" for ethnic minorities. The number of languages used as a medium of instruction totals about 50. In practice, Russian is the language of instruction while native language teaching is limited to either a few years of schooling or is merely a subject within the curriculum. Outside the national territories, minority languages are not used in instruction.


Ireland
United Kingdom
Norway
Sweden
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Den
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Russia
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Minsk
Byelarus
Hung.
Moldova
Moscow
Romania
Kiev
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Turkey
Georgia
Tbilisi
Armenia
Yerevan
Azerbaijan
Baku
Syria
Kazakhstan
Aral Sea
Iraq
Uzbekistan
Turkmenistan
Ashkhabad
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China
Japan
North Korea
South Korea
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Boundary representation is not necessarily authoritative.
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TRANSLITERATION

(Library of Congress System)

Russian		Library of Congress
А	а	a
Б	б	b
В	в	v
Г	г	g
Д	д	d
Е	е	e
Ё	ё	ë
Ж	ж	zh
З	з	z
И	и	i
Й	й	ĭ
К	к	k
Л	л	l
М	м	m
Н	н	n
О	о	o
П	п	p
Р	р	r
С	с	s
Т	т	t
У	у	u
Ф	ф	f
Х	х	kh
Ц	ц	t͡s
Ч	ч	ch
Ш	ш	sh
Щ	щ	shch
Ъ	ъ	''
Ы	ы	y
Ь	ь	'
Э	э	e
Ю	ю	i͡u
Я	я	i͡a

II. FOUNDATIONS OF SOVIET EDUCATION

Nineteenth Century

During the nineteenth century, the traditional influence of the Church over education was losing ground as the State administration asserted increasingly more control. Positivism, materialism, empiricism, nihilism, conservative religionists, and more liberal Church authorities all challenged each other, paving the way for Marxism to emerge in the 1890s.

Belinsky and Herzen predominated in socioeducational theory during the course of the 1830s and 1840s. Vissarion Belinsky (1811-48), a revolutionary democrat and leading thinker of his day, believed environment rather than heredity influenced upbringing and education. By the 1840s, Belinsky came to believe that only socialism could give equal opportunity for all and could educate responsibly for life and society. Alexander Herzen (1812-70), a contemporary of Belinsky, thought education should form a humane and free individual who would strive to reform society. The moral education of a child stressed responsibility and self-discipline.

Other educators (Pirogov, 1810-81; Chernishevsky, 1828-89; Dobrolyubov, 1836-61; Ushinsky, 1824-70), between the 1850s and 1870s, carried the socio-revolutionary philosophy further. Considering it restrictive to creativity and moral development, Pirogov in particular attacked the tendency toward utilitarian, early specialization in the classroom. Chernishevsky preached the importance of applied sciences and equality of the sexes and patriotism. He thought the environment was the principal factor in the formation of man's qualities.

Dobrolyubov opposed any kind of authoritarianism in education. He called for close attention to the development of the child's identity, independence, and physical fitness in addition to moral upbringing. He was categorically against corporal punishment. Ushinsky believed effective education was based on physiology, psychology, philosophy, history, etc. His fundamental tenet was a profound love for one's country. Moral development was to supplant intellectual development. Appreciation of work was to remain essential in the physical and moral perfection of the evolving individual.

Twentieth Century

In 1917 the Bolshevik Revolution took over a country which was still encumbered by centuries of tradition in society and education. Elementary schooling was available to only about half of the children between the ages of 8 and 12. Access to secondary and higher education institutions was not easy for peasants and workers.

The Bolshevik government immediately embarked on a new series of reforms. Anatoly Lunacharsky (1887-1933), appointed by the People's Commissariat of Education (Narodnyi komitet prosveshcheniia/ Narkompros), became the first People's Commissar of Education. Nationalization of all educational institutions followed. Separation of Church from the State and school from the Church was decreed on January 20, 1918. Secular education was deemed to be the only alternative. A series of decrees followed consolidating all power in the Narkompros. Thus, all levels of education were brought under the monolith of a single ministry.

Illiteracy stood at 66% in 1916. The Seventh Communist Party Congress fought illiteracy by compelling individuals between the ages of 8 and 50 to learn to read and write in Russian or their native language. By 1930 illiteracy had been reduced to 38%.

At an All-Russian Congress of Teachers in 1918, Lenin suggested a simplified, uniform polytechnic system of education, consisting of five years of elementary and four years of secondary schooling, with integration of school and politics as the pivotal point in educational training. Religious instruction and corporal punishment were forbidden. Tests and homework were eliminated and students were encouraged to train in manual and work skills.

In 1919 the Seventh Communist Party Congress prepared a policy guideline on education: schools were to work in tandem with the Party in the elimination of class divisions; they were to be the guide in communist ideology and a training ground for the establishment of communism. Education was to be free and compulsory.

1920s and 1930s

The New Economic Policy (NEP), in the 1920s, freed the intellectual milieu of Party-imposed restraints and paved the way for new cultural experimentation and avant-garde movements (futurism, acmeism, modernism, constructivism). Constructivism, in particular, integrated the idea of art and industry and strengthened the notion that education and work in the service of society is the core of Soviet training. Pavel Blonsky (1884-1941), an educational psychologist, was especially influential in promoting the idea that education was to be both social and political. He laid the ideological foundation for the labor school which evolved into the Soviet general secondary labor polytechnic. Stanislav Shatsky (1878-1934), on the other hand, promoted the concept of labor education *(trudovoe vospitanie)*, which incorporated physical labor, artistic activities, games, and intellectual work with communal living. Victor Shulgin envisaged the "withering away of the school" itself which represented an "artificial division" between education and society.

In this very fertile era of experimentation, the number of secondary schools grew at an immense rate, particularly in rural areas. In 1919 four-year workers' schools *(rabfaki)* were organized for those who had missed secondary-level education. This path enabled many workers and peasants to complete secondary school and enter tertiary-level institutions, which were opened to all.

The Declaration on Preschool Education of 1917 stated that public education must start in the first few months of life. As a result, preschool education became a reality in 1919. Approximately 2.5 million homeless children roamed the country after the October Revolution. In the spirit of communism, Lenin established children's homes to care for them and to provide preschool and elementary education.

A new nine-year school curriculum (formerly eight) went into effect in the 1920s under Narkompros. New school syllabi were put in place under the aegis of the State Academic Council (Gosudarstvennyi Uchonyi Soviet). Sciences received attention as did physical education and the arts. Although educational standards varied between regions, in 1927 Narkompros introduced a universal and compulsory curriculum which included core disciplines. Under Narkompros, an educational structure emerged which included the following levels:

a. Elementary school and lower secondary – seven years,

b. secondary school – nine years,

c. the seven-year factory school,

d. the school for rural youth – length of programs varied, and

e. the trade school or a four-year vocational-technical school.

A 10-year (complete secondary) school was introduced by Narkompros in 1929 and remained the model for Soviet secondary schools through the early 1960s and beyond. Polytechnic work training (orientation for technical sciences with work experience) was also established in 1929, while political education was fostered by the proliferation of Pioneer (young people's) organizations, already in place since 1922, which provided young children with the moral values of communist society.

Following the Seventeenth Communist Party Congress in 1934 and Stalin's ascent to power, educational theorizing was put under tight Party control under the paradigm of social realism. The Party, preeminent in knowledge and education, was the vehicle for service training for Party cadres. Marxist-Leninist principles became the sole educational guidelines in Soviet schools. An idea such as the "withering away of the school," was now regarded as impractical. Education was to be a part of the "struggle against the bourgeoisie" and the "transformation of society" to communism.

Vladimir I. Lenin equated education *(vospitanie)* with politically conscientious, disciplined labor. Nadezhda Krupskaya (1869-1939), Lenin's wife, interpreting the Marxist-Leninist doctrine in an educational context, stressed the desirability of "communal expressions" and the need for polytechnic training. At the same time, Anton Makarenko (1888-1939) founded the first labor colony (Gorky Labor Colony) for juvenile delinquents, a prototype of children's labor collectives. He discarded both authoritarianism and complete informality in education, viewing the child in terms of social humanism: a child ought to be educated in the spirit of collectivism, correct moral judgment, values, and communist ethics.

Under Stalin, several changes were made:

- Examinations were reintroduced after having been abolished in the progressive 1920s in favor of assessments of projects and essays.

- Standardized textbooks and Narkompros-prescribed teaching methods were mandated.
- Standard curricula were the norm in elementary and secondary schools,
- Uniforms became mandatory dress code, and
- A strict classroom discipline was maintained.

In 1931 Josef Stalin declared that Soviet education was 10 years behind that of advanced countries and that the distance had to be bridged or "we shall go under." Since one-third of the total population remained illiterate, universal, compulsory education was implemented for children up to age 15.

1940s and 1950s

Reforms in education were interrupted by World War II. Following World War II, compulsory education was reduced from eight years to seven years, and rules of discipline were adopted as a means of educating the "Soviet Man" along prescribed modes of social behavior. Authorities were concerned with the quality of education and acted upon it by introducing several measures:

- Compulsory examinations at all existing levels as well as examinations for the maturity certificate *(svidetel'stvo zrelosti)* following completion of the 10-year school were mandated.
- Excellence in top students was recognized through the award of gold and silver medals.
- Educational research was undertaken and the Pedagogical Academy of Sciences was established in 1943 to conduct research activities.

At the Nineteenth Communist Party Congress in 1952, compulsory education was extended from seven to 10 years (ages 7 to 18). By 1956 it was apparent that schools did not provide adequate training for work and life. Hence, during the de-Stalinization period (1954-61), attention once again focused on the improvement of academic standards and the reviving of polytechnic training along the lines of Blonsky, Krupskaya, and Makarenko.

The seven-year programs were converted to eight-year curricula, while the 10-year schools changed to 11 (the latter reverted back to 10-year schools in 1964). At the Twentieth Communist Party Congress in 1956, Nikita Khrushchev lamented the lack of relevancy between school and life as well as the conscious avoidance of physical work by students. In 1958 a decree requiring at least two years of physical work prior to entering university-level institutions proved to be most unpopular. It was revoked in 1964.

1960s and 1970s

In 1964 during the Brezhnev era, a Committee under the guidance of the Academy of Sciences and the Academy of Pedagogical Sciences of the USSR concluded that students were overloaded with classes and homework and that ideological deviations ought to be combated with an emphasis on greater political indoctrination as well as physical labor. Compulsory preconscription military training for boys aged 15 or older was introduced in 1968. At this time agriculture and rural areas were experiencing a significant shortage of both skilled and semiskilled workers, because a great many peasants preferred moving to towns. To reverse the trend, efforts were made to stress vocational training. Academic curricula retained an impressive number of contact hours (2,880+) in eight-year programs; however, the quality of instruction varied greatly.

In the 1970s the Soviet educational establishment became discontent with the rigidity in teaching methodology and prescribed curricula. Although mathematics and the sciences continued to be viewed as the most important facets of education in the elementary and secondary grades, creativity in lieu of rote learning began to be promoted. Curricular reforms and a re-examination of teaching methods and textbooks were encouraged. Emphasizing mathematics, the curriculum in grades IX-X was expanded to include mathematical induction, linear equation, logarithmic and trigonometric functions, analytic geometry, and algebraic analysis. The study of physics was revised and updated in grades VI-VII to include molecular, kinetic, electronic, and atomic theory. In grades VIII-X the curriculum incorporated the theory of relativity, Maxwell's electromagnetic field, etc. New elective courses included cybernetics, ecology, and logic.

In spite of continued emphasis on polytechnic education, the 10-year secondary schools remained academically oriented, geared to preparing students for higher education. University admission remained the first choice of secondary school graduates; social mobility was based on educational achievement. Tertiary polytechnical training was considered a second alternative.

1980s

With the advent of *perestroika*, which began in 1985 under Mikhail Gorbachev, there was a realization that centralized planning of educational activities led to an imbalance between the number of graduates, particularly from institutions of higher education, and the needs of the national economy and production. "Guidelines for Restructuring Higher and Secondary Specialized Education in the Soviet Union," issued by the Party in 1984 and targeted for implementation by 1995, links the restructuring of the educational system with the political, economic, and social *perestroika* of Soviet society.

The guidelines are concerned with all aspects of the educational structure, including organization and management, finance, curricular content, methodology, student life, and research activities at institutions of higher education.

In April 1988 the Politburo of the Communist Party of the Soviet Union Central Committee created the State Committee for Public Education, a single administrative unit, uniting the Ministry of Education, the Ministry of Higher and Specialized Secondary Education, and the USSR State Committee for Vocational and Technical Education. The chairman of the Committee has ministerial rank. The Committee is responsible for setting educational policy and standards. Analogous committees have been created in the republics. Approximately 30 to 40 institutions of higher education in the Russian republics are directly accountable to the Committee; about 850 report directly to the republic Committees. Other specialized university-level establishments remain under the aegis of separate ministries, e.g., the Ministries of Health, Agriculture, and Transportation. It is expected that this move will allow local educational administrations to exercise more authority in meeting the educational needs of their regions.

The trend toward a greater administrative and financial autonomy necessitates the development of an accreditation system. The accrediting agency role is expected to be played by the All-Union State Committee for Public Education. The mechanisms and parameters of an accreditation process are still being worked out; however, it is expected that by the end of 1991 approximately 200 institutions of higher education will apply for accreditation. Accredited academic institutions will receive financial support from the State for specific projects and their diplomas will represent quality training. With individual republics thinking about their own systems of accreditation as well as preparing for their own financial support to institutions, degree-granting institutions may have to seek All-Union accreditation in order to be recognized as accredited, degree-awarding organs by all the Soviet republics.

The thrust of *perestroika* in education is the establishment of closer links between regional needs and academic establishments. Only minimal central planning is anticipated. The tradition of offering training programs at factories and places of production is to be strengthened by stronger contacts with centers of industry and production. It is felt that combining studies with labor will meet very specific needs of the workplace.

Cooperation on a contractual basis between an institution of higher education and the workplace is being developed in various branches of industry and the service sector. Partial financial reimbursement for research activities from enterprises is being sought when such research is directly applicable to a specific problem in the enterprise. (By the end of 1987, more than 500 cooperative agreements had been implemented, with 200 additional programs in the planning stages.)

A new form of cooperation is exemplified by the Educational Scientific and Industrial Complex, which coordinates training of specialized personnel between institutions of higher education, research centers, and enterprises. Closer coordination of research activities is planned between the Academy of Sciences, individual ministries, and institutions. In 1987 the Scientific and Educational Center was founded and began operating on a share-holding principle involving various research, technical and industrial organizations, ministries as well as institutional departments; it is designed to unite resources and facilities. (Seven such centers are now in place and more are planned.) At the same time, educational research centers were being organized in higher educational institutions to coordinate and streamline research activities.

While the trend is toward greater autonomy and financial self-sufficiency, institutions which are involved in the training of service professions, e.g., agriculture or the health service professions, will continue to be subsidized primarily by the State.

Education in the Constituent Republics

In spite of the recent declaration of "sovereignty" among most of the 15 Soviet republics, education remains, in the main, subordinated to Moscow. Draft legislation being developed stipulates that All-Union legislation shall remain the basis for the law on education in the republics. The republics, on the other hand, declare their respective laws take precedence over those of the central government.

In 1991 the Ukrainian parliament went perhaps the farthest in passing legislation that declared its full autonomy in all matters of education and the Ukrainian language as the official language of the republic. With such a precedent, hopes for such local demands as single-sex secondary and higher education in the Muslim republics of central Asia, or the replacement of compulsory Russian courses by the study of English or German in the Baltic republics will be strengthened.

As economic and political events are very much in flux within the Soviet Union, so are the rules and regulations affecting education.

- Although assurances are given that higher education will be depoliticised, admissions requirements are still largely set by Moscow.

- Admissions forms are printed in Russian, although resolutions have been passed by republic parliaments granting official status to native languages.

- A significant break with the Soviet scheme of education occurred, when an Estonian decree for 1990-91 split the academic year into three trimesters instead of the traditional two-semester academic year.

- At Talinn Technical University (Estonia), a credit system is being implemented. Under this system, 1) a student may choose courses and accumulate a certain number of credits for a degree, and 2) the bachelor's, master's and doctorate degrees will replace the standard Soviet degree structure of diploma (four to five years), the candidate of sciences *(kandidat nauk,* three years), and the doctorate (research degree). The institution, not the state, will award the degrees.

- In line with the new national consciousness in the Baltic republics and elsewhere, ideological course requirements are being dropped and at least eight tertiary-level institutions of higher education are either planned or are opening in Armenia, Latvia, and Lithuania. Although there is relatively little opposition from authorities, the establishment of new institutions is expensive; hence, many innovative schemes remain on the drawing boards. Institutions of higher education already organized vary from informal, single-subject projects to full-scale campuses of the U.S. type.

- Lithuania has a new university of social science.

- A branch of the University of Marxism-Leninism in Kaunas (Lithuania) restructured itself to form a new institution. New departments and programs have been added. Foremost are courses in international and inter-ethnic relations, law, contemporary philosophy, management, marketing, and international monetary theory.

- Vilnius University in Lithuania reorganized its entire economics program along a Western-oriented curriculum.

- A Free University of Tbilisi (Georgia) is scheduled to open soon, offering courses entirely in English. At the onset, its curricula would stress agriculture, applied sciences, politics, and law.

- A People's University in Minsk (Byelorussia) is being flooded with applicants for courses in history.

- In the Armenian SSR, the new Anakht University of the Humanities offers a program not only in English but in Armenian and Kurdish Studies. The Kurdish community throughout the world has responded by encouraging applications of students wanting to study the Kurdish heritage.

III. ELEMENTARY AND SECONDARY EDUCATION

Elementary and secondary education in the Soviet republics comprises preschool through grade XI. Components of these levels of education are preschool programs; elementary education in grades I-IV; lower secondary in grades V-IX; and upper secondary in grades X-XI. These terms will be used as descriptive translations of Russian terms identified in each subsection of this chapter. All of these stages of education occur in what Soviet educators call the General School *(obshchaia shkola)*. Grades I through IX are collectively called Incomplete General Education, and Grades X and XI are called Complete General Education.

Academic Calendar

The school year begins on September 1 and ends between May 30 and June 25, depending on the grade. The length of the school year, excluding vacation periods, is 34 weeks for grades I-IV, 35 weeks for V-VII, 36 weeks for VIII and 38 weeks for IX-XI. Most schools meet six days per week. This schedule yields a total of 2,340 days of schooling for a Soviet student completing 11 years of education, compared to 2,160 days in most of the United States for a 12-year education.

Curriculum

The syllabi for grades I-XI has been established by the USSR Committee for Public Education with input from various committees of the USSR Academy of Pedagogical Sciences. This national curriculum generally has been adopted by each of the republics and has created a uniform national course of study. Recent reforms make the republic educational committees responsible for curriculum development. Textbooks and teaching materials are also standardized, although curricular reforms, particularly those in the late 1980s affecting the social sciences, have led to textbook development problems and consequent shortages of teaching materials and texts.

The Curriculum Plan (see Table 3.1) outlines the most common version of the general school curriculum. Variations are allowed for schools which offer subject specializations, e.g., language schools, science and math academies. NonRussian-speaking republics add instruction in the native language and literature and two to three additional hours per week in grades II-XI for Russian (as a foreign language).

There remain significant quality differences between urban and rural school districts, largely due to the costs of maintaining quality schools in poorer regions, the difficulty of attracting teachers to rural areas, and the problems of providing full educational opportunities in sparsely populated areas. The governments of the republics consciously adopt incentive policies and redistribute resources to negate socioeconomic inequalities, but, by public admission of Soviet commentators, much remains to be done. So-called "less complete" *(malokomplektnye)* schools often require shift scheduling because of a shortage of space, lack of basic science paraphernalia and possibly only one teacher simultaneously handling students from a number of grades.

Labor Training

Every school child devotes a number of hours each year to labor and vocational training. In the early grades, these hours are filled with talk of careers and field trips to factories, offices, and institutions of higher education. In the middle grades, students use this time for vocational training (metal shop, wood shop, sewing, cooking, electronics, etc.). In the upper secondary classes of academic secondary schools, students spend four hours each week either enhancing their skill training or practicing their labor skills in a field setting. Students in upper secondary vocational-technical institutions spend a far greater percentage of their time on nonacademic subjects. In grades V-VIII and X, from 10 to 20 days each year are devoted to vocational placements, often in the enterprise formally affiliated with the school. These affiliations permit schools to use enterprise facilities for teaching and practice in industrial, domestic, and business vocational skills.

Extracurricular Activities and Electives

The Soviet school day is very formal and purely academic. Groups outside the school administration and faculty organize all extracurricular activities. The Communist Youth League (Komsomol) and the Young Pioneer organization conduct the most extensive programs. Often utilizing school buildings and sometimes having their own quarters, these organizations run afterschool and evening programs for recreation, interest development, and academic or artistic activity. They sponsor competitions which often lead to regional and national competition for participants. Athletic clubs, like Spartak, Dynamo, Central Red Army and others, operate athletic complexes which offer training, practice, and competititon for children and adults of all ages. Competitive allegiances are to a regional club, not to a school.

Only recently have Soviet upper secondary schools begun to offer courses on the family or to consider career and educational guidance a legitimate function of the faculty and administration. A course on the Soviet family is now mandatory in secondary schools in most republics.

Preschool, Elementary and Lower Secondary Education

Two-thirds of all Soviet children attend formal preschool programs. Children, aged 6 months to 3 years, enroll in nursery school *(detskie iasli)* which provides structured day care. Children aged 3 to 6 enroll in kindergarten *(detskii sad)*. These programs generally last from 7 a.m. to 7 p.m. Fifty-two percent of preschools operate six days per week (the normal work week for most Soviet citizens). The remainder are on a five-day schedule. Of 147,400 preschools in 1988, about 1,600 were special centers for ill, disabled or mentally retarded children.

Elementary education (a translation of *nachalnoe obrazovanie* or beginning education) comprises the first four years of formal education. Until 1984 the entry age for elementary school was 7. The 1984 education reform lowered the entry age to 6, added an additional year of elementary education (now grades I-IV), and extended general schooling through secondary graduation from 10 to 11 years. In nonRussian-speaking republics (see Chapter I), there is an additional year of elementary education required to teach both Russian – until recently the universal language of the USSR – and the local native language.

The elementary grades provide functional skills in reading, writing, arithmetic, speech, hygiene, and social behavior. Legislated goals also include socialization for work, civic responsibility, and physical training and an introduction to art, music, and environmental issues.

Lower secondary (middle) school comprises grades V-IX (grades IV-VIII prior to 1984). Subject-based teaching is employed in these grades. Lower secondary school marks the end of compulsory schooling (grade IX). The graduate receives a Testament to the Completion of Incomplete Secondary Education *(Svidetel'stvo ob okonchanii nepol'nago obshchego srednego obrazovanii)* which is required for entry by every type of secondary school.

Upper Secondary Education

Three types of institutions offer the upper secondary school curriculum for grades X-XI: the general academic schools; the secondary vocational-technical school (SPTU; see Chapter IV for details); and the specialized secondary school (SSUZ; see Chapter IV also for information). The core curriculum is similar in all three, and the exit diploma from each confers similar rights to university access.

General Academic Secondary School

Approximately 50% of ninth grade graduates proceed directly to a general secondary school *(obshchaia srednaia shkola)*. This is the most direct path of entry into a university, polytechnic, or institute. Increasingly, however, general secondary schools are specializing in subject areas, providing intensive preparation for university study in specific disciplines. The general academic secondary schools which offer specializations, usually from elementary through upper secondary grades, are called lycee or gymnasia (litsei, gimnaziium). Entry is extremely competitive, as lycee and gymnasia attract the children of urban professionals and offer greater opportunities for admission to the most prestigious universities and institutes.

The nationally uniform general secondary curriculum, outlined in the Curriculum Plan in Table 3.1, includes the following subject content in grades IX through XI:

Mathematics: *Algebra* – Arithmetic and geometric progressions, rational exponents, decimal logarithms, elements in computer mathematics and programming, real numbers, elementary functions, trigonometric functions, derivatives, complex numbers, and probability; *Geometry* – vectors, coordinates on a plane, trigonometric functions, metric correlations in a triangle, similar figures, regular polygons, axioms of solid geometry, vectors in space, perpendicularity of straight lines and planes, polyhedrons, coordinates in space, volumes of polyhedrons, and figures generated by revolution.

Biology: *Man and Human Health* – Overview of human organism, skeletal and muscular system, blood and circulatory system, respiration, metabolism and energy, excretion, the skin, digestion, the nervous system, reproduction and development; *General Biology* – Evolution, both organic and human; ecology; biosphere; cytology; basic genetics and plant, animal and microorganism selection.

Physics (drawing on grades VII and VIII physics of motion, substance, heat, light, electricity, and electromagnetism): *Mechanics* – kinematics, dynamics, laws of conservation, oscillations and waves; *Molecular Physics* – molecular-kinetic theory, fundamental thermodynamics; *Electrodynamics* - electric field, laws of direct current, magnetic field, electric currents in diverse media, electromagnetic induction, electromagnetic oscillations, electromagnetic waves, elements of the theory of relativity, and *Quantum Physics*;

Chemistry: *Inorganic Chemistry* (drawing on grade VIII chemistry which includes oxygen, oxides and combustion, hydrogen, acids and salts, water, solutions and bases, classes of inorganic compounds, periodic law and periodic system of elements, atomic structure, chemical bond and halogens) – electrolytic dissociation, regularities of chemical reactions, the production of sulfuric acid, carbon, properties of metals, and iron; *Organic Chemistry* – chemical structure of organic compounds, saturated hydrocarbons, unsaturated hydrocarbons, aromatic hydrocarbons, hydrocarbon processing and natural sources of hydrocarbons, alcohols and phenols, aldehydes and carbolic acids, esters, fats, amines, amino acids, proteins, nucleic acids, synthetic macromolecular substances and their polymers.

All of the science curricula specify laboratory and field trip activities, with at least 10 hours of lab in each of the tenth and eleventh grades in each subject. Schools offering specialized study in one or more of the sciences or languages may offer intensified versions of these syllabi through courses referred to as "faculty" *(fakultativnye)* or "intensive" *(uglublenye)* courses. Such courses are not elective courses but higher level substitutions for required subjects. Intensive courses do not yield any advanced standing in postsecondary institutions. The lycee or gymnasia may offer six to eight additional hours of instruction in "major" subjects each week.

The exit examinations for grade XI are set for three- to three-and-one-half weeks in June. Subject exams are required in Russian language, Russian literature, local language (optional), mathematics, physics, chemistry and history. (The history exam was cancelled in May 1988 and had not been reintroduced as of Fall 1990 due to syllabus redesign and text development problems.) Each examination is written and oral. Oral examinations follow the full day written exams in each subject. The oral examination consists of three questions chosen by lot, two known to the examinee before the exam and one unknown. These examinations are graded on the 5 point scale. Students who succeed in the examinations by passing all required subjects receive the Maturity Certificate *(attestat zrelosti)*.

Students who earn perfect 5 scores on all of their matriculation examinations receive the Gold Medal *(zolotaia medal')*. Those who score 5 in all subjects but one and that with no less than a 4 can receive the Silver Medal *(serebriannaia medal')*. At the SSUZ and university levels, students who have a 5 in 75% of their courses and 4s in the remainder and who receive 5s in all of their state examinations are graduated with distinction *(s otlichiem)* as indicated on the sample transcript in Appendix D. Earning a medal on the matriculation examinations qualifies a student for exemptions from university entrance examinations.

Special Schools

There are numerous special schools, such as the lycee and gymnasium already mentioned, and boarding schools *(internaty)* for specialized studies. Students who attend special academic secondary schools for gifted students are offered noncompetitive entry into many institutions of higher education in the Soviet Union. Such schools encompass both elementary and secondary levels. Students are recruited through competitions in the subjects of specialization.

One example of this type of school is the Novosibirsk Physics-Mathematics Institute which is affiliated with Novosibirsk University. This particular university is in the middle of what is called *akademgorodok* or academic city, a technological showplace on the doorstep of Siberia, which incorporates a major university and a number of research centers. Youths are recruited into the special science and math secondary school through competitions called *olympiads*. These students then normally matriculate in the supervising university.

Table 3.1. Curriculum Plan for the General Secondary School in the Russian Republic for 1989-90

	Hours Per Week by Grade										
Subject	**I**	**II**	**III**	**IV**	**V**	**VI**	**VII**	**VIII**	**IX**	**X**	**XI**
Russian Language	9	10	12	11	7	6	4	3	2		
Literature					4	3	2	2	3	4	3
Mathematics	4	5	5	6	6	6	6	6	6	4/5	4
Computer Science										1	2
History					2	2	2	2	3	4	3
Soviet Law									1		
Family Life										1	
Soviet Society											1
Environment	1	1									
Nature			1	1	1						
Geography						2	3	2	2	2/1	
Biology						2	2	2	2	1	1/2
Physics							2	2	3	4	4
Astronomy											1
Chemistry								3	3/2	2	2
Drawing							1	1	1		
Foreign Language					4	3	2	2	1	1	1
Graphic Art	1	1	1	1	1	1	1				
Music	1	1	1	1	1	1	1	1			
Physical Education	2	2	2	2	2	2	2	2	2	2	2
Military Training										2	2
Labor/Vocational Study	2	2	2	2	2	2	2	3	3	4	4
Totals	**20**	**22**	**24**	**24**	**30**	**30**	**30**	**31**	**32/ 31**	**32**	**30/ 31**

Source: Informatsionnyi sbornik Ministerstva narodnogo obrazovaniia RSFSR, No. 14, May 1989, pp. 18-19.

Note: Hours separated by a slash indicate first and second semester hour differences.

Similarly, the Physics-Mathematics School affiliated with Moscow University was established in 1963 to draw into its programs students from the rural areas of European Russia and to raise their level of math and science preparation. Most special courses, other than the normal secondary curriculum, are taught by graduate students and regular faculty at Moscow University. Class sizes are normally 10 to 15 students, and the student-faculty ratio is less than 3:1. Students average about 39 hours of instruction per week, compared to the normal complete secondary school student's 30 to 32 hours. Ninety-five percent of graduates continue on to higher education. The Moscow school sends most of its graduates to Moscow University's mathematics and science departments and to such prestigious institutes as the Moscow Engineering Physics Institute and the Moscow Physics Technical Institute, where students generally major in electrical and computer engineering studies.

The Moscow and Novosibirsk schools are called intern schools, which means they are boarding schools with dormitories. Other such boarding schools are located in Sverdlovsk, Vyatka, Volgograd and Ulianovsk.

Comparable schools exist in the arts, music, and dance as well as in language studies, although most school districts maintain language specialization schools, usually called lycee. In the area of athletics, there is an entire network of special schools, such as the afterschool programs for children aged 6 and 11, often run by sports clubs and concentrating on a half-dozen sports. Single-sport programs are restricted to outstanding young athletes and are often run, too, by leading sports organizations. Outstanding athletes can then move on to fulltime day schools, which focus on athletic development and have superior facilities, and ultimately to sports boarding schools, which are often near major Olympic training sites and provide all of the amenities required for the development of athletes. Most national team and olympic athletes in the Soviet Union have progressed through these programs. Special schools were merely tolerated under Khrushchev, but they were reinvigorated under Brezhnev and Gorbachev. It is likely that streaming of talented youth will continue.

Special schools in urban areas lack dormitories but, like the boarding schools, offer challenging educational opportunities. Examples of these are the "October" region School No. 238 in Leningrad and the Lycee under the Linguistics University (formerly Maurice Thorez) in Moscow. In these schools, early grades study up to six languages, including Latin, Greek and Arabic, along with western languages.

"Small Faculties"

Students in general secondary schools near universities often have the opportunity to enroll in special classes taught by graduate students and faculty from nearby universities, so-called "small faculties." These courses are offered in the secondary school. They provide advanced intensive preparation to the students and serve as recruiting devices by the universities which offer them. Students who complete a course with the "small faculty" may receive a certificate of completion which will clearly bear the descriptive term "Small Faculty" somewhere in the document. These classes generally introduce secondary students to specific fields of study and have more value for career guidance and study skill preparation than for academic content. They do not yield any advanced standing at tertiary institutions.

IV. VOCATIONAL, SPECIALIZED AND TECHNICAL EDUCATION

Vocational Secondary Level Education

Vocational-Technical/Secondary Vocational-Technical School

The vocational-technical school *(professional'noe tekhnicheskoe uchilishche*--PTU) and the secondary vocational-technical school *(srednoe professional'noe tekhnicheskoe uchilishche*-SPTU) were the result of post-World War II programs designed to give lower secondary school graduates skills for entry into the job market. By the late 1960s, many students were simultaneously pursuing complete secondary education programs in evening programs and attending the PTU during the day. In the early 1970s, many PTUs began to add the courses required for upper secondary education to their offerings. These PTUs, capable of offering both vocational training and a full upper secondary education program for grades X and XI, are known as SPTUs.

There are PTUs and SPTUs for every branch of the economy, from culinary training to hairdressing and from secretarial programs to welding. The vocational programs in these institutions are 80% practical and 20% theoretical. Programs in the PTUs do not include any of the academic subjects expected in grades X and XI. However, there are different syllabi for those entering the PTU with only ninth grade education, those entering with upper secondary education, and those entering with upper secondary education, including industrial skill training in the field they intend to study. Those without upper secondary education are given additional courses in basic economics, Soviet society, and military training. They also receive a more rudimentary understanding of their craft than complete secondary graduates. As an example, the ninth grade graduate would receive a course on computers; the eleventh grade graduate would receive a course on computers and the control of production processes.

PTU programs are one to two years in length. The upper secondary graduate may enter a PTU to acquire a marketable skill in a one- to one-and-one-half year program. Upon completion of the PTU program, the student is issued a certificate *(svidetel'stvo)* indicating the skill acquired or the vocational level achieved.

The SPTUs offer a similar range of "professions." Most, however, require a higher degree of general knowledge, mathematical ability, reasoning ability, or technical comprehension than the PTUs. Their programs consist of a technical-professional cycle and a general studies cycle, the latter required to meet graduation requirements for complete secondary school. Ninth grade graduates follow a three-year program of study, taking examinations in the general studies courses at the end of the second and third years. The general studies are distributed over the three years, so only the student who completes the full program holds a credential equivalent to complete secondary education graduation. (See Table 4.1 for a sample program of studies.) The eleventh grade graduate can complete the same vocational program in a period of one-and-one-half years.

Graduates receive a Diploma of Completion of Vocational-Technical School *(diplom ob okonchanii proftekhuchilishcha).* Those who obtain this diploma "with distinction" have the option of direct entry into an institution of higher education as first year students. However, most graduates must work for two years to become eligible to apply for admission to a university, polytechnic or institute.

Technical Lyceum

The technical lyceum *(tekhnicheskoe uchilishche)* offers fulltime (12- to 18-month) courses for graduates of 11-year complete secondary education in specific skills or trades (restaurant or tourist trades, crafts, etc.). Technical lyceum programs are intended to be terminal vocational programs and do not lead to advanced standing in any other type of institution. The reader unfamiliar with Russian should not confuse the Russian words in the name of this type of institution with the use of those words separately to describe the specialized secondary institutions identified below.

Table 4.1 Three-Year Curriculum for Regulator/Assembler of Radioelectronic Equipment and Instruments, Secondary Vocational-Technical School (SPTU)

Admission: Requires incomplete secondary education (grade IX)

Duration (Weeks per Year): I = 43; II = 41; III = 41.

	Hours Per Year		
Subject	**I**	**II**	**III**
Production Training	486	564	90(E)
Specialized Technology	97	93	27(E)
Radioelectronics	23	76 (E)	
Electrical Technology	46	34	
Radio Materials		38	
Automation of Production		21	17
Technical Drawing	34		
Basic Economic Studies			34
Russian Language & Literature	80	76	54(E)
History	114	76 (E)	44
Social Studies			71(E)
Family Life			30
Foreign Language	70		
Mathematics	160	135 (E)	
Introduction to Computers	84	17	
Geography		54	
Biology		64	
Physics/Astronomy	154	135(E)	
Chemistry	80	97(E)	
Physical Education	80	76	27(E)
Military Training	40	38	64
Totals	**1,548**	**1,476**	**1,476**

E = final exam in subject

Specialized and Technical Education: *Tekhnikum* and *Uchilishche*

There are two types of specialized secondary educational institutions (SSUZ): the *tekhnikum* (*tekhnikumy*, plural) for highly skilled technical, industrial, engineering technologies, agriculture, business and some applied arts fields; and the *uchilishche* (*uchilishcha*, plural) for preschool teaching, nursing, medical technologies, and librarianship.

The SSUZs offer four-year programs which include complete secondary school subjects for graduates of lower secondary school. They also offer two-year programs for graduates of upper secondary school who desire only to acquire a technical or professional qualification. The recruitment of students to these programs is heavy by Soviet standards and includes radio, television, billboard, and newspaper advertising.

Admission to SSUZs is based on entrance examinations which test general knowledge at the ninth or eleventh grade level for graduates of each, respectively. The mathematics portion of the ninth grade graduate's examination includes algebra, geometry, functions and trigonometry. The mathematics section of the eleventh grade graduate's examination includes, in addition to the above, derivatives, integrals, polynomials, probability, coordinates of a vector, scalar products of vectors, volumes of polyhedrons end permutations, combinations and binomial formula.

There is little consistency of quality or scope among SSUZs. Some programs, particularly in technical schools offering "high tech" skills and in schools with glamorous placements (e.g., working in foreign currency stores, jobs having access to travel or foreigners), are extremely competitive. Other institutions must go beyond those who succeed in the entrance examination in order to meet enrollment targets.

There were 4,539 SSUZ in the Soviet Union in 1989, more than half of these (2,595) located in the Russian republic. In 1989, 4,231,400 students were enrolled in SSUZ institutions: 66.7% were enrolled in day programs, 6.6% in evening programs, and 26.6% in correspondence study. Students in correspondence tracks generally require one additional year to complete their programs of study. (See Table 4.2 for the percentage of students enrolled in SSUZ in different programs.)

Curricula for each of the 297 specialties (see Appendix B for specialties and specializations) are set by the State Committee for Public Education. Each specialty may have a number of specializations and may lead to a variety of qualifications which are professional titles and ranks. (For additional programs of study, see Chapter VII. Health Professions and Chapter VIII. Teacher Training.)

One example is Energy Machine Building, specialty Number 1602. This specialty has two specializations: turbine construction and hydro-machine construction. Depending on the course sequences completed, a graduate of this program could obtain one of the following qualifications: technician-builder; technician-technologist; technician-mechanic; or technician-technologist, production manager.

This program lasts three years and 10 months for a ninth grade graduate and two years and 10 months for a complete secondary school graduate. The complete secondary school graduate simply enters the program in the second year. The program of study for this specialty, Turbine specialization, production manager qualification for a ninth grade graduate, i.e., including complete secondary education, is given in Table 4.3.

Grading and Examinations

Grading, as at all levels of education in the Soviet republics, is on the 2 to 5 scale. Each Curriculum Plan identifies those subjects which have state examinations, local examinations or "control work" (*kontrol'naia rabota*). Control work is a graded project or paper.

Numerical	Written	Translation
5	*otlichno*	excellent
4	*khorosho*	good
3	*udovletvoritel'no*	satisfactory
2	*neudovletvoritel'no*	unsatisfactory
	zachet	credit

Some courses are simply taken on a pass/fail basis and given a grade of *zachet*. The award of *zachet* is granted for most laboratories (*kursovaia rabota*), practicals, outside assignments, or class participation. A course may be given an examination grade for the theoretical part of the subject and a *zachet* for the practical component. *Zachet* is also commonly given for the initial semester(s) of a multi-semester course or course sequence, with an examination awarded in the

Table 4.2. Percentages of Students by General Area of Study in SSUZ

Industrial Technologies	30.9%
Construction Technologies	5.8%
Transportation	6.6%
Communications	1.1%
Agriculture	15.2%
Business	10.1%
Law	0.2%
Health	13.1%
Physical Education/ Sport	0.4%
Pedagogic Schools	12.1%
Cultural Studies	2.0%
Art & Cinematography	2.5%

Source: Nauchno-issledovatel'skii institut problemy vysshei shkoly, *Srednaia spetsial'naia shkola v 1989 g.*, Moscow, 1990 , Appendix, Table 4.

Table 4.3. Three-Year-Ten-Month Curriculum for Energy Machine Building

Specialization: 1602, Production Manager
Type of Institution: *tekhnikum*
Admission: Completion of grade IX

	Classroom Hours	Lab/Pract Hours	Project Subject Hours
General Cycle (to complete secondary school diploma requirements)			
History	213		
Marxism/Leninism	195		
Mathematics	253	20	
Introduction to Computers	65	34	
Physics	148	26	
Chemistry	62	16	
Russian Language & Literature	255		
Republic Language & Literature	195		
Military Training	55	86	
Physical Education		460	

	Classroom Hours	Lab/Pract Hours	Project Subject Hours
Special Cycle			
Drawing		172	
Technical Mechanics	203	32	20
General Electrical Technology with Electronics	64	34	
Technology of Materials	104	24	
Standardization & Measurement	56	20	
Introduction to Processing Materials	100	26	
Technological Equipment	106	28	
Numerical Controls	57	30	
Production Automation	42	18	
Production Finance & Planning	65	18	12
Management & Laws	88	12	
Labor/Environmental Safety	48	12	
Specialization Subjects			
Technical Thermodynamics & Basic Hydraulics	48	12	
Installation & Use of Turbines	157	20	
Turbine Construction	170	48	30
Regulation & Automation of Turbines	38	10	
Gas Turbine Installation	44	6	
Qualification Subjects			
Automated Systems for Production Management		123	
Industrial Sociology & Pedagogy		60	
Recordkeeping, Liability & Procedures	60	Cooperative production	40
	Total Hours = 4,278	**Total Weeks = 115**	

At the end of the program, in addition to a diploma project and the normal course examinations, those in the technician-technologist and production manager qualification tracks must pass state examinations in their specialty.

final semester of the course. The final examinations are given by a State Qualifying Commission which is approved by the State Committee for Public Education and consists of the director of the institution, department head, director of practicals/labs, teachers and representatives of public organizations affiliated with the institution. Students who receive three grades of 2 are expelled. A student who receives one to two grades of 2 is given one month to retake and pass the exams. Unsatisfactory grades do not appear on the student's public record. Elective courses which are failed may not be displayed on the student's academic record as released for public consumption. However, all institutions maintain an internal transcript *(kladishch')* which contains all grades earned, hours per course and examinations completed. These are not issued publicly, primarily because they are produced and updated manually on large sheets of paper, nearly impossible to duplicate efficiently, even if copying facilities were readily available.

Diploma

Upon completion of a SSUZ program, the graduate is awarded the Diploma of Completion of Specialized Secondary Education *(diplom ob okonchanii srednego spetsial'nogo uchebnogo zavedeniia)* by the Qualifications Commission (kvalifikatsionnaia kommissiia). This diploma marks the completion of both complete secondary education and a specialized course of study in the field undertaken at the SSUZ. Students who obtain grades of 5 in 75% of their subjects are awarded a diploma with distinction *(s otlichiem)*. This is commonly referred to as a "red diploma," *(krasnyi diplom)* because it is issued with a red coverlet. Honors at the specialized technical level is in this way slightly distinguished from the silver and gold medals which mark honors at the secondary level.

Colleges

A recent development, since 1989, has been the transformation of some specialized technical educational institutions into colleges *(kolledzh/kolledzhy*, plural). Industrial ministries and professional organizations have led this movement to create institutions capable of educating highly trained specialists able to perform the work previously entrusted to university diploma engineers, particularly in areas of production, automation and computer-dependent processes. In addition to teaching students to work in highly automated environments, these colleges heavily utilize foreign-produced and designed machinery. Most of them are actively seeking contacts with western firms and institutions. Their long-term goal is to attract overseas production investment by providing native workers trained at the highest levels of industrial automation and conversant in the investor's language. As of late 1990, 12 institutions had been upgraded from *tekhnikumy* to colleges. A number of other institutions were planning to upgrade to the college level.

Approval by the State Committee for Public Education to upgrade a *tekhnikum* to a college has been based on the following:

- The contents of the *tekhnikum* courses generally parallel courses of affiliated institutes and tertiary institutions.
- Faculty in the colleges predominantly hold the Candidate's degree; most SSUZ faculty hold only the *diplom* from a university, polytechnic or institute.
- Financing per student, approximately 3,000 rubles per student per annum, is significantly higher than financing in the average SSUZ.
- The colleges, finally, offer both the diploma normally awarded by an SSUZ and a new degree, the college diploma, conferring the title of junior engineer *(mladshii inzhiner)*.

Entry into a college is similar to entry into a *tekhnikum*. Entrance exams determine eligibility. However, competition for entry into the new colleges is as intense as into some of the most prestigious universities of the country, with up to four applicants for each available space.

Students may follow the normal SSUZ program for a Diploma of Specialized Secondary Education in a particular qualification. This would require the normal three-year-and-10-month program for a graduate of grade IX or a two-year-and-10-month program for a graduate of complete secondary school (grade XI). The majority of the courses required for the complete secondary section of the SSUZ diploma are completed in the first year of study. SSUZ officials maintain that this compression of grades X and XI into essentially one year results in a more intensive program than that received in the general secondary school (excluding specialized lycee and gymnasia), and that SSUZ students, therefore, are more motivated and goal-oriented because of their earlier choice of career path. Table 4.4 traces the completion of those courses required for the complete secondary section of diplomas from three parallel tracks: the general secondary school; a normal SSUZ *(tekhnikum);* and a secondary professional vocational school (SPTU).

The student who enters a college with complete secondary education simply gains exemptions from the general education courses and military training and enters the college at the second-year course.

For all students, the technical course requirements are the same. At the end of the seventh-semester course, students receive the Diploma of Completion of Specialized Secondary Education. Those who wish to complete the college-level program are evaluated in the middle of the fourth-year course on the basis of their class performance to date, their specialization project, their creative ability and knowledge of a foreign language. It is important to the mission of these colleges – the provision of highly skilled labor for import technology – that their students gain mastery over a foreign language. Language study is included in all five years of most programs, although teacher shortages in some foreign languages are proving an obstacle to the short-term realization of this goal.

Students approved for the college-level program then enter a three-semester program leading to the Diploma of Completion of College at the Second Level *(diplom ob okonchanii kolledzha po vtoroi stupeni)* with the qualification of Junior Engineer *(mladshii inzhiner).* (See Table 4.5 for a college-level program of study.) Colleges visited indicated that 25%-30% of their students were proceeding to the college level. This is likely to increase, for some of the students now completing their seventh semester entered the institutions before they were designated as colleges and had no intention of going beyond the minimum program. Current student intakes are geared more toward producing Junior Engineers with a more academic than applied orientation than normal in a SSUZ. This is emphasized by the elimination of evening classes at the colleges visited and a clear desire on the part of the directors to curtail and eventually eliminate correspondence enrollment at their institutions, thereby producing a more homogeneous, fulltime student body. Correspondence students spend 40 days each year at the institution for laboratory work and examinations.

The Leningrad Radio Equipment Building College (Leningradskii radioapparatostroitel'nyi kolledzh) is one of five "colleges" in Leningrad. It offers three degree levels with variations on each based on entry qualifications. (See Table 4.6.)

Transferability of Studies

One of the more significant features of the new college programs at the SSUZ level is the appearance of articulation agreements between the new colleges and institutions of higher education, specifically polytechnics and institutes. Graduates from the Junior Engineer program of the Leningrad Radio Apparatus Construction College may enter the third-year course of the Leningrad Electrotechnical Communications Institute. Junior Engineer graduates from the Leningrad College of Automation of Forest Product Industries may enter the fourth-year course (of the five-and-one-half year diploma program) of the Forest Product Technology Academy (a very well known institution of higher education) or the Technological Institute for Cellulose and Paper Production, both located in Leningrad.

Similar articulation agreements are being discussed and gradually implemented in a variety of fields where colleges are being created. In education, students will be able to transfer from a pedagogical school *(uchilishche)* to an upper-level class in pedagogical institutes.

This marks the first recognition within the USSR that the course of study at SSUZ is tertiary level. Largely because of their organization in the former Ministry of Higher and Specialized Secondary Education, the SSUZ have always been referred to as secondary institutions. They remain partly secondary in that they continue to offer courses leading not only to the acquisition of a technician-level skill but also to the completion of secondary education. Yet they also offer higher level technical courses for secondary school graduates. A list of majors offered is included in Appendix B.

Bridge Programs

Preparatory Schools

An institution which is neither secondary nor vocational but of a specialized nature is the preparatory section *(podgotovitel'noe otdelenie)* of institutions of higher education. These sections were established in the late 1960s and 1970s to increase the number of mature students entering the university from the workforce and, since studies had shown that agricultural and working class students had been performing less adequately than their urban white collar counterparts at the universities,

Table 4.4. Comparison of Secondary Courses (X and XI) as Scheduled in Parallel Programs Leading to Complete Secondary School Graduate Status

	General Secondary		***Tekhnikum***				**Professional Vocational School**		
	X	**XI**	**1**	**2**	**3**	**4**	**1**	**2**	**3**
Subject									
Russian Language							2/2	2/2	2/2
Russian Literature	4/4	3/3	5/6	2/3					
History	4/4	3/3	6/5			/6	4/2	2/2	2/1
Social Studies		2/2		2/2	2/2	/6			3/2
Family Studies	1/1								/3
Foreign Language	1/1	1/1	3/2				2/2		
Mathematics	5/6	6/5	6/6	4/			4/4	3/4	
Computer Science (see Math)			2/4				3/1	1/0	
Geography	2/1			incl. in Chemistry					2/2
Biology	1/1	1/2							
Physics	4/4	4/4	6/6				5/3	3/4	
Chemistry	2/2	2/2	5/4				2/2	2/3	
Physical Education	2/2	2/2	4/4	4/4	4/4		2/2	2/2	1/1
Military Training	2/2	2/2	1/1	1/1	2/3		1/1	1/1	2/3
Labor Practice	2/2	2/2	in technical courses				in technical courses		
Electives	4/4	4/4							

In hours per week per subject.
/ = first/second semester.

Table 4.5. Three Year-Eight-Month Curriculum for Junior Engineer College Program

Specialization: 2201, Electronic Computing Technoogy
Diploma: Diploma of Completion of College, Second Level
Qualification: Junior Engineer – Electronics
Admission: Complete secondary graduation, grade XI

	Hours by Semester						
Subject	**1**	**2**	**3**	**4**	**5**	**6**	**7**
Social Science	36	32	30	30	72	78	
Republic Literature	36	48					
Mathematics	72						
Foreign Language	36	32	30	30	24	26	108
Higher Mathematics						52	72
Physics						39	54
Drawing	54	32					
Theory of Electronics	90	48					
Electro-radio Materials		64					
Electro-radio Standards	72	32					
Electronics & Microelectronics	90	32					
Analog Electronics		64					
Impulse & Digital Electronic		80					
Parts/Mechanisms of Computer Technics	72						
Algorithmic Language	72	64					
Economics/Planning of Production				60	48		
Production Organization				45	24		
Industrial Psychology						52	108
Soviet Law			45				
Safety & Environment					60		
Microchip Production		32	105	30			
Computers			60	60			
Programmed Maintenance		45	30				
Peripheral Systems			75	45			
Computer Project Techniques				105	24		
Technology & Automated Computer Production				30	84		
System of Automated Project Planning						78	72
Technical Service & Repair of Computers				30	48		
Automated Control Systems						52	
Specialization Subjects					48	39	90
Major Electives						52	144
College Electives	72	64	60	60	48	52	72
Total Hours	702	624	450	555	480	520	720

to give additional assistance to the students before they begin university studies.

The minimum credential for entry into a preparatory section is a secondary school diploma, either an *attestat* (certificate) from an academic secondary school or a diploma of completion of secondary education from a SPTU or SSUZ.

The preparatory programs begin in November and last eight months. Much of the instruction is individualized. Students live in dormitories if they are from outside the city and enjoy many of the rights and privileges of university students. The study is both remedial and preparatory for university entry. Examinations are given at the end of the program. Those passing the examinations may enter the university in the first year of their program. University "appendices to diplomas" might include these courses, listing them as a preparatory year *(podgotovitel'nyi god)* or preparatory faculty *(podgotovitel'nyi fakul'tet).*

Most universities also offer preparatory courses for high school students preparing to take entry examinations for that university. These test preparation courses are offered in the evenings or by correspondence.

In the 1980s, one-fifth of the entering first-year university class was selected from those having completed preparatory programs. Recent public criticism indicates that students who fail to gain entry into an institution of higher education directly from upper secondary school will work for the obligatory two-year period and then obtain employer nomination to a preparatory program, thereby gaining access at least to evening or correspondence divisions of the university.

Preparatory Programs for Foreign Students

The preparatory faculty for foreign students *(podgotovitel'nyi fakul'tet dlia inostrannykh grazhdan)* provides courses in Russian language and literature, humanities and sciences to students of socialist and developing countries to prepare them for entry to a Soviet institution of higher education. These courses last one year. They are often listed on the student's transcript *(prilozhenie k diplomu),* although these courses would be considered clearly preparatory by the universities offering them. Students successfully completing the program are admitted without examination to universities, depending on their qualifications, their number, and the number of spaces at host institutions.

Table 4.6. Comparison of Degree Levels and Durations in College, Based on Entry Qualification.

The Leningrad Radio Equipment Building College (Leningradskii radioapparatostroitel'nyi kolledzh) is one of five "colleges" in Leningrad. It offers three degree levels with variations on each, based on entry qualifications:

Specialization: 2201, Electronic Computing Technology

Degree Level	Entry Qualification	Term of Study	Qualification
I	Grade IX Grade XI	1 yr 10 mo 10 mo.	Repairman – Radio Equipment or Computer Operator
II	Grade IX Grade XI	3 yr 10 mo 2 yr 10 mo	Electronic Technician
III	Grade IX Grade XI	4 yr 8 mo 3 yr 8 mo	Junior Engineer – Electronics

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*If foreign language study is followed for the entire program, the Level III Qualification is Junior Engineer – Electronics (Translator).

V. HIGHER EDUCATION

Historical Survey of Higher Education

Higher education in the Soviet republics can be traced back to the fourth century when the Academy of Kolkhid was established. It was followed in the eleventh to twelfth centuries by the academies of Ikaltea, Germy, and Ghelati. In the main these institutions were ecclesiastical centers training students for the priesthood. However, rudiments of mathematics, philosophy, grammar, rhetoric, and music were also taught.

The Academica and Universitas Vilnensis (Vilnius, Lithuania) was founded in 1579 with two faculties: philosophy and theology. Priests and workers for the Catholic Church, lawyers and bureaucrats were educated mainly from among the gentry. Tartu University (Estonia) dates back to 1532. The Kiev-Mogilyan Academy (Ukraine) opened in 1632, teaching Slavonic language, mathematics, astronomy, and theology. The Moscow Slavonic-Greek-Latin Academy (Russia) was founded in 1687, combining secondary and postsecondary instruction. In 1814 the Academy moved to the Troitsa-Sergiev Monastery in Zagorsk, where it still functions as the Moscow Theological Academy.

In the late seventeenth and early eighteenth centuries, new specialized higher educational institutions were founded. With the encouragement of Tsar Peter the Great, the School of Mathematics and Navigation (Shkola Matemematiki i Morskovo Flota) was founded in Moscow in 1701 and the Naval Academy of Petersburg (Peterburgskaia Academia Flota) in 1715, followed by other specialized institutions in both Moscow and Petersburg (Leningrad). The University of the Academy of Sciences in Petersburg was also established at that time. It may be viewed as the first secular Russian university in the country where theology was not included in the curriculum. Moscow University opened in 1755.

Access to institutions of higher education was granted to those who could afford it or to those who were able to pass the rigorous entrance examinations and receive financial assistance from benefactors.

By the late 1880s, no fewer than 5,000 students attended 11 tertiary-level technical institutions in Riga (Latvia), Moscow, Odessa (Georgia), and Kiev (Ukraine). However, by 1915 only 105 institutions existed to serve a population of approximately 160 million. No university-level education existed in the present-day republics of Byelorussia, Moldavia, Azerbaijan, Armenia, Kazakhstan, Uzbekistan, and Kirghizia. The immense territory of Siberia had only one technological institute in Tomsk.

After the Bolsheviks took over the government, the People's Commissars in 1918 mandated that all those willing to study had to have free access to educational facilities. Workers and peasants were to be given priority in admission. Workers' faculties were established to prepare students to enter higher educational institutions. To accommodate the immense demand for places at tertiary-level facilities, new institutes and new universities were opened: Moscow Academy of Mines, 1918; the universities of Nizhnij Novgorod (Russia), Tbilisi (Georgia), Dnepropetrovsk (Ukraine), Irkutsk (Irkutsk Region), Voronezh (Russia) in 1918; the University of Baku (Azerbaijan) in 1919; the University of Tashkent (Uzbekistan) and Yerevan University (Armenia) in 1920. By the end of the First Five-Year Plan in 1931-32, the Union had no more than 700 higher education institutions. At the beginning of World War II, there were 817 institutions of higher education functioning in the Soviet republics. World War II brought the development of higher education to a standstill and many of the newly established schools were either closed or destroyed.

Revitalizing and reconstructing the educational system immediately after World War II (1945) proved to be an immense task. An unprecedented effort was made to rebuild the economic and industrial base. Universities and institutes were reopened at a rapid pace, often in inadequate facilities with very limited equipment. However, approximately 90% of the pre-War students at universities and institutes were able to continue their studies immediately after the War.

Institutions of higher education reached the pre-war level of recovery by 1948, doubling the number of graduates in higher education under the Fifth Five-Year Plan of 1951-55. By directive of the Sixth Five-Year Plan (1956-60), a substantial increase in the numbers of students studying in the evening and by correspondence was urged, enabling them to further their education without giving up fulltime employment. New institutions of higher education in many branches of industry were opened in Siberia, Kazakhstan, and the Soviet Far East. In 1966 the federal Ministry of Education of the USSR was set up.

The period between 1970 and 1980 experienced an especially rapid growth of educational institutions when, between 1970 and 1989, 92 postsecondary institutions were added to the system. At present, 904 universities (Zaporosh'e University in the Ukraine, established in 1985, being the newest) and higher institutes function in 350 cities all over the Soviet republics, with an enrollment of 5.2 million students on a fulltime, part-time, or correspondence basis.

Within the Russian republic, there are 512 (56.6%) institutions of higher education, followed by the Ukraine with 147 (16.3%), Moldavia and the Caucasian republics with 85 (9.4%), Kazakhstan with 55 (6.1%), Uzbekistan with 44 (4.9%), Byelorussia with 33 (3.7%), and the Baltics with 28 (3%). The demand for places at higher institutions continues to be strong, particularly in urban centers. For example, in 1990 there were 6,000 applications for 3,000 places available at the Kiev Polytechnic Institute. The pressures of demand also vary by field of specialization.

Governance

The higher educational establishment (vyshee uchebnoe zavedenie/VUZ) in all Soviet republics had been entirely under the control of the State. Based on the Statute on the Higher Education Establishments of the USSR of 1961, the mission of tertiary-level institutions is to

- train highly qualified specialists educated in the spirit of Marxism-Leninism,
- carry out research that will contribute to the solution of the problems of building communism,
- produce textbooks and study aids,
- train teachers and research workers,
- provide advanced training for specialists,
- disseminate scientific and political knowledge among people, and
- study problems connected with the utilization of graduates and with the improvement of the quality of their training.

The network of universities, polytechnics, technological institutes, medical institutes, academies, music conservatories, institutes of fine arts, pedagogical institutes, and other specialized establishments in all Soviet republics and regions are under the purview of the State Committee for Public Education in their respective republics. The State Committee sets and regulates standards for entrance requirements, curricula, syllabi, and textbooks. It also plans professional training. In the case of some specialized institutions, corresponding ministries or departments assume the responsibility for administration and finance in cooperation with the State Committee. Inspection of higher institutions by the State Committee is an integral part of the administrative process.

Institutions of higher education in the Soviet republics are managed in accordance with the Regulation for Higher Education Establishments endorsed by the State Committee for Public Education. Under *perestroika* centralized management of higher education, however, is slowly being shifted to local and institutional control. Institutions are encouraged to enter agreements with enterprises and organizations to supply trained graduates for specific fields of work. Even though the demand for university-level graduates is growing, this schema may produce a regional oversupply or undersupply of trained graduates in specific employment categories and places the burden of high quality training on more prestigious institutions.

Moscow State University is perhaps the best example of institutional self-government. The University received full autonomy to administer both student and faculty affairs in December 1990. Other institutions of higher education, which are known, to date, to have received autonomy by consent of the State Committee for Public Education are the Leningrad Auto-Mechanical Institute, Kharkov State University, and Kharkov Pharmaceutical Institute, both in the Ukraine.

In 1990 the State Committee for Public Education proposed that institutions of higher education seek autonomy through a process known as attestation. Several types of attestations could be sought: All-Union, republic, or regional. An institution of higher education would be free to choose at which level an application for attestation would be filed. An attestation commission, under the aegis of the State Committee for Public Education, would set the parameters for the review process. An attestation process would be set into motion at the request of the institution. Review for attestation status would be conducted by an inspection of an Attestation Commission. An institution would be granted a

Certificate of Attestation for a period of five years which would predicate the application for automonous status.

An institution of higher education could also seek accreditation. An accreditation review commission would function under the auspices of the State Committee for Public Education. It would be composed of specialists in a specific field of endeavor who survey institutional programs. Accreditation would be sought for individual curricula or, in the case of narrowly specialized institutions, for the institution as a whole. Furthermore, accredited programs or institutions seeking autonomy would be freed from further review by the Attestation Commission.

Regional centers are being organized on a self-supporting basis to coordinate activities of institutions of higher education. Such centers are already in place in Moscow, Leningrad, Rostov, Cheliabinsk, Tomsk, Penza, Voronezh, Sverdlovsk (Russia), Minsk, Gomel (Byelorussia), Kiev, Dnepropetrovsk, and Kharkov (Ukraine). The task of the regional centers is to develop an infrastructure between higher education and industry, social and cultural associations to determine need and quality of training and retraining. Eighty-two rectors' councils coordinate higher education at the local levels and focus on curriculum development and professional training. The Committee for Public Education exercises control over the councils by reviewing their annual reports.

The government grants special recognition to institutions of higher education for achievements in research and the training of specialists. The distinguished Order of Lenin (Orden Lenina) or the Order of the Red Labor Banner (Orden Trudovogo Krasnogo Znamenia), the Order of the October Revolution (Orden Oktiaberskoi Revolutsii) and the Order of the Friendship of People (Orden Druzhby Narodov) denote institutional quality. The honor of bearing the name of a distinguished citizen is also granted in recognition of academic merit (e.g., I.E. Repin, Institute of Fine Art, Sculpture and Architecture; N. A. Rimskii-Korsakov, State Conservatory; I. P. Pavlov, State Institute of Medicine).

At present, many university-level institutions are changing their names. For example, the Order of the Red Labor Banner, A. M. Gorki, Kharkov State University (Ukraine) now will be known simply as Kharkov State University. The only institution solely dedicated to linguistic studies, the prestigious M. Torez, Moscow State Pedagogical Institute of Foreign Languages, is now the Moscow Linguistic University.

Until 1991 free higher education in the Soviet republics was guaranteed by the Soviet constitution. Monthly stipends were given to approximately 75% of the students. Access to all facilities within a higher education establishment was also free. However, the Armenian SSR set a precedent for free education in the Soviet system. It is the first Soviet republic to admit students to state institutions on a fee paying basis. Beginning in September 1991, the top 80% of students who passed the entrance examinations will continue to have their fees paid by the State; the remaining places will be offered on a fee paying basis to applicants who pass the entrance examinations with less satisfactory grades.

Various tuition and fee paying measures are now being instituted, among others, at the Medical Institute in Dushambe (Tadjik SSR), the State University of Karaganda (Kazakh SSR) and Sverdlovsk Pedagogical Institute (Russian SFSR).

Institutional Structure

The structure of higher education institutions in the USSR varies. Universities are divided into faculties which reflect major fields of specialization. Within the faculties are specific departments dedicated to narrow specializations, e.g., philosophy (which includes Marxism-Leninism), scientific communism, ethics and aesthetics, contemporary history, archeology, and medieval history. Specialized institutes in education, medicine, law, agriculture, economics, arts, and physical education exist in great numbers throughout the Soviet republics. The student population of these institutions ranges between 3,000 and 7,000 students. The polytechnics, with an average enrollment of 10,000 to 15,000 students, are important educational and research establishments, many with numerous departments that train engineers and technologists. Polytechnics also offer refresher and continuing education courses for practicing professionals in education, sciences, and engineering.

Each institution has a council set up to deal with institutional policies. It includes the rector, pro-rector, deans, heads of departments *(kafedry)*, and professors as well as members of public organizations and students.

Each institution of higher education is headed by a rector, formerly appointed by the State Committee, but, since 1987, elected by the faculty and administrative personnel at institutional level for a five-year term of office. By the academic year 1988-89 rectors were elected at 15% of the institutions of higher education. As head of each institution, the rector is also the chairperson of the university senate, which is composed of faculty deans, heads of departments, the librarian, and a number of representatives of public organizations with an interest in the institution.

The vice-rector is responsible for direct management of both educational and research activities. Major institutions may have several pro-rectors, each responsible for specific tasks in the management of the establishment.

Deans *(dekany)*, as heads of faculties, are elected by secret vote of the council members from among faculty. They oversee the administration of the faculty they serve, including curricular problems and student affairs. The dean is helped by assistant deans appointed by the rector.

All professors holding a chair must have a *doktor* degree. Senior lecturers *(dotsenty)* are holders of the *kandidat nauk* (candidate of sciences) degree. Professors teach approximately 10 hours per week and conduct research. The teaching load of instructors *(prepodavateli)* is normally 12 hours per week in addition to research activities.

Concern is expressed that the teaching personnel at institutions of higher education are aging and their ranks are not being replaced in sufficient numbers. Furthermore, there appears to be a tendency for self-perpetuation, i.e., graduates become instructors in the institution in which they completed their studies.

Institutional Types*

Higher education is offered through universities, polytechnics institutes, specialized institutes and academies, pedagogical institutions, and *uchilishcha* (specialized secondary schools). Sample institutional profiles follow the descriptions of each institutional type.

Universities

Sixty-eight universities enroll approximately 600,000 students according to the 1987 data furnished by the State Committee for Public Education. Universities are prestigious institutions that prepare skilled personnel as well as academic staff for tertiary-level teaching. Their student enrollment is adjusted to meet the economic demands of the republics.

The university offers a variety of disciplines in natural sciences as well as in the humanities. Training is often theoretical in scope and focuses on preparing future researchers and teachers for secondary and higher educational institutions. In the main, fundamental research is conducted at universities.

The State Committee for Public Education, in 1991, proposed a program for the development of higher education which suggests, among others, the establishment of universities for technology and humantities. Whether such institutions will be entirely new or whether they will emerge from a reorganization of existing ones is not clear.

KHARKOV STATE UNIVERSITY

Pl. Dzerzinskogo 4, 310077 Kharkov
Ukrainian SSR
Telephone: 45 37 75

Rektor: Ivan E. Tarapov

Founded: 1805. Developed considerably after 1917 and served as a basis for the creation of a number of other institutions of higher education

Governing Bodies: Rektor, Pro-Rektors, Academic Council

Faculties & Institutes: History, Mathematics and Mechanics, Physics, Chemistry, Biology, Geology

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*This special report is designed to explain and describe the Soviet system of education. It is by no means an exhaustive study of all educational institutions; however, it is an attempt to outline parameters used at all levels of the educational framework. Since there is a great deal of uniformity in institutional types throughout the Soviet republics, this volume does not list institutions. A comprehensive reference source for institutional listings is the *International Handbook of Universities* (12th ed.), available from Walter de Gruyter, Inc., 200 Sawmill River Road, Hawthorne, New York 10532. Another valuable source is *The World of Learning* 1989 (39th edition), which may be obtained from Europa Publications Ltd., 18 Bedford Square, London WC1B3JN, United Kingdom.

and Geography, Economics, Foreign Languages, Philology, Radio-Physics, Technical Physics, Chemical Research, Biological Research

Academic Year: September to July (September–January; February–July)

Admission Requirements: Competitive entrance examinations following general or special secondary school certificate

Fees: None

Language of Instruction: Russian and Ukrainian

Diplomas: Diploma of Specialist in relevant field of study, 5 years. *Kandidat Nauk*, a further 3 years and thesis. *Doktor Nauk*, by thesis after the *Kandidat*

Libraries: Central Scientific Library, 3,500,000 volumes; Institute of Chemical Research, 15,000; Institute of Biological Research, 20,000; Observatory, 1,000

Academic Staff (1989-90): 990 fulltime

Student Enrollment (1989-90): 11,000 domestic, 900 international, and 5,000 evening and correspondence students

Polytechnic Institutes

There are 64 polytechnic institutes throughout the Soviet republics. These large establishments train engineers and future researchers in various technical specializations. Even though fundamental research is being done at the polytechnics, the focus is much more on applied research.

LENINGRAD POLYTECHNIC INSTITUTE

Politehnicheskaja ul. 29
195251 Leningrad K-251
Russian SFSR
Telex: 121803 ODRA; Telephone: 247 21 31

Rektor: Yu. S. Visiliev

Founded: 1899

Governing Bodies: Rektor, Pro-Rektors, Academic Council

Faculties: Hydraulic Engineering, Electrical Engineering, Energetics and Power Engineering, Mechanical and Machine Engineering, Physical Mechanics, Physical Metallurgy, Engineering Economics, Radio Engineering, Technical Cybernetics, Evening Studies, Correspondence Courses

Academic Year: September to July (September–January; February–July)

Admission Requirements: Competitive entrance examinations following general or special secondary school certificate

Fees: None

Language of Instruction: Russian

Diplomas: Diploma of Specialist in relevant field of study, 5 years. *Kandidat Nauk*, a further 3 years and thesis. *Doktor Nauk*, by thesis after the *Kandidat.*

Library: 2,500,000 volumes

Academic Staff (1986-87): 1,800 fulltime

Student Enrollment (1986-87): 22,000

Specialized Institutes and Academies

Institutes and academies prepare specialists in specific fields of study. Their principal function is to train a limited number of specialists in narrow fields such as engineering, agriculture, forestry, law, economics, medicine, pharmacy, veterinary sciences, education, arts, and music. The highly regarded Maxim Gorki Literary Institute of the Writers Union of the USSR, under the auspices of the All-Union Writers Association, falls within this category.

M.V. LOMONOSOV INSTITUTE OF FINE CHEMICAL TECHNOLOGY

Prosp. Vernadskogo 86
117571 Moscow, Russian SFSR
Telephone: 437 35 27

Rektor: V.S. Timofeev

Founded: 1930

Governing Bodies: Rektor, Pro-Rektors, Academic Council

Faculties & Centers: Chemistry and Technology of Rare Elements and Materials for Electronics, Chemistry and Technology of Polymers, Biotechnology and Organic Synthesis, Biotechnology, Metallurgy of Sintered Materials, Rubber Chemistry and Physics

Academic Year: September to July (September–January; February–July)

Admission Requirements: Competitive entrance examinations following general or special secondary school certificate

Fees: None

Language of Instruction: Russian

Diplomas: Diploma of Specialist in relevant field of study, 5 years.

Library: 230,000 volumes

Academic Staff (1990): 1,040 fulltime

Student Enrollment (1990): 3,000

LITHUANIAN CONSERVATORY

Prosp. Geomino 42
232000 Vilnius Lithuanian SSR
Telephone: 61 26 91

Rektor: V. Lavrusas

Founded: 1933. Acquired present title in 1990

Governing Bodies: Academic Council

Faculties & Institutes: History, Mathematics and Mechanics, Physics, Chemistry Biology, Geology and Geography, Economics, Foreign Languages, Philology, Radio-Physics, Technical Physics, Chemical Research, Biological Research

Academic Year: September to July (September–January; February–July)

Admission Requirements: Competitive entrance examinations following general or special secondary school certificate

Fees: None

Language of Instruction: Lithuanian, Russian, Polish, German, English

Diplomas: Diploma of Specialist in relevant field of study, 5 years. *Kandidat Nauk*, a further 3 years and thesis.

Libraries: Two libraries, 420,000 volumes; 25,000 records; 9,000 tapes

Academic Staff (1990): 327 fulltime and 80 part-time

Student Enrollment (1990): 700 domestic, 21 international, and 232 external

Pedagogical Institutes

Approximately 198 pedagogical institutes train teachers for elementary and secondary level. Teachers preparing to teach a single subject complete a four-year program. Those who intend to teach two or more subject areas complete a five-year curriculum.

MOSCOW PEDAGOGICAL INSTITUTE

Malaya Pirogovskaia ul. 1
119435 Moscow
Russian SFSR
Telephone: 246-01-23; FAX: 248-01-62

Rector: Victor L. Matrosov

Founded: 1872 as Moscow Higher Women's *Uchilishche*. Previously part of the Second Moscow State University, founded in 1917.

Governing Bodies: Rector, Pro-Rectors, Academic Council

Faculties: Physics, Mathematics, Biology and Chemistry, Geography, Chemistry, History, Russian Language and Literature, Foreign Language, Primary School Education, Music and Singing, Graphic Arts, Pedagogy and Psychology, Education of the Handicapped, Industrial Education, Public School Administration, College Teaching, Preparatory Department

Special Facilities: Museums, 2 Agro-Biological Stations, Observatory, "Prometheus" Publishing House"

Academic Year: September to July (September–January; February–July)

Admission Requirements: Competitive entrance examinations following general or special secondary school certificate

Fees: None

Language of Instruction: Russian

Diplomas: Diploma of Specialist in relevant fields of teaching or education, 5 years. *Kandidat Nauk*, a further 3 years and thesis. *Doktor Nauk* following the *Kandidat*. Also teaching qualification for elementary levels, 4 years. MA program for foreign students.

Libraries: Central Library, 1,300,000 volumes; also departmental libraries

Academic Staff (1989-90): 1,066 fulltime; 181 part-time

Student Enrollment (1989-90): 10,595 domestic, 688 international

Specialized *Uchilishcha*

Although most *uchilishcha* represent specialized secondary schools, some are identified as institutions of higher education (VUZy) where the admissions requirements and length of programs parallel those of other tertiary-level institutions. Schools of drama and cinematography *(teatral'nii uchilishcha)*–e.g., M. S. Sshchepkin, School of Theater at the Small Theater State Academy in Moscow (Teatral'noe Uchilishche [VUZ] imini M. S. Sshchepkina pri Gosudastennom Akade micheskom Malom Teatre)–fall in this category.

Marine transportation and navigational science institutions are also referred to as *uchilishcha*, e.g., School of Marine Engineering in Leningrad (Leningradskoe Vyshchee Inzhenernoe Morskoe *Uchilishche* [VUZ] imini Admirala S. O. Makarova) or the School of Marine Engineering in Odessa (Odesskoe Vyshchee Inzhenernoe Morskoe *Uchilishche*).

MURMANSK HIGHER UCHILISHCHE OF MARINE ENGINEERING

Sportinaia ul. 13/6 183778 Murmansk
Russian SFSR
Telephone: 6-20-51

Rector: E. I. Portnov

Founded: 1950

Governing Bodies: Rector, Pro-Rector, Academic Council

Faculties: Navigation, Technology, Electrical Equipment, Marine Engineering, Preparatory, Evening and Correspondence

Academic Year: September to July (September–January; February–July)

Admission Requirements: Competitive entrance examination following general or special secondary school certificate

Fees: None

Language of Instruction: Russian

Diplomas: Diploma of Specialist in relevant field, 5 years.

Library: 100,000 volumes

Academic Staff (1989-90): 140 fulltime

Student Enrollment (1989-90): 3,000

Access to Higher Education

Regardless of the type of secondary training completed, a Soviet student has the right to continue education at a postsecondary institution; however, the proportion of secondary school graduates going on to higher education dropped from 60.6% in 1985 to 57% in 1989. According to the Scientific Research Institute for Problems of Higher Education in the USSR (1990), enrollment by category (day, evening, correspondence) between 1970-71 and 1988-89 was as follows:

	1970-71	1980-81	1988-89
Day	2,241	2,373	2,721
Evening	659	543	548
Corresp.	1,682	1,603	1,730

Articulation arrangements exist between institutions of higher education, secondary schools, and specialized secondary schools to facilitate a student's admission. Depending on the department or field of specialization to which a student is applying, entrance examinations may present a major obstacle.

Rules of admission, published annually throughout the Soviet republics, specify entrance examination procedures, requirements for specific disciplines, and whether the programs are pursued fulltime, part-time, or by correspondence. Soviet institutions of higher education have no central clearinghouse system for admissions.

An institutional admissions commission, organized by the rector, consists of the pro-rector for instruction and research, deans of faculties, at least two professors *(dotsenty)*, representatives of the administrative region *(oblast)* or city or large city districts *(raiony)*, party, trade union and Komsomol organizations of the respective institution. Decisions on admissions are made by the admissions committee. The names of students who have been accepted are posted publicly for general information. Priority in admission is granted to those students who receive exemptions due to excellent academic performance, followed by those who score highest on the admissions tests. The admissions interview is also included in the ranking. A maximum cumulative rank of 15 is allotted for all phases of the admissions process.

Generally, applications for admission are submitted directly to the faculty of the institutions and are accepted during June and July. Entrance examinations are usually held in August, and registration for enrollment takes place at the end of August.

Admission to higher educational institutions depends primarily on merit. An interview is also required to determine the student's aptitude and motivation in a given field. Applications are accepted from citizens of both sexes who meet the following requirements:

- Students have completed secondary education and hold a maturity certificate *(attestat zrelosti)*, or a certificate of secondary education *(attest o srednem obrazovanii)*, or a diploma of completion of vocational-technical education *(diplom ob okonchanii proftekhuchilishcha)*, or diploma of completion of specialized secondary education *(diplom ob okonchanii srednego spetsial'nogo uchebnogo zavedeniia)*.
- For fulltime study, students are under 35 years of age. There is no age limit for part-time, correspondence or evening study.
- Students have practical work experience independent of interruptions and work related to completion of secondary education, work combined with study in secondary school, or work done prior to entering secondary school.
- Students have passed a competitive entrance examination set by each institution of higher education.
- Students have presented character references from Party, trade union, Communist Youth League (Komsomol) and other social organizations and heads of industrial enterprises and organizations, collective farms and/or pedagogical councils. Soviet Army or Navy demobilized personnel must present character references from their commanding military units.
- Students who reside in rural areas and elect to continue their education in fields of specialization that will directly benefit the development of agricultural or forestal regions, medicine or the teaching professions are also granted priority admission to the institution of their choice.

To ensure equal opportunity for admission, numerous tertiary-level institutions offer a one-year preparatory program designed to help students meet entry requirements for specific disciplines. Students who successfully complete such an orientation program are issued a certificate of completion and are exempted from taking an entrance examination.

Even though the secondary school record is taken into consideration, top scores on the entrance examination are weighted heavily in the admissions process. Gold medalists for academic achievement in secondary school are given special consideration. Examinees who fail to pass the entrance tests in one year may try again the following year. Noncompetitive entry to tertiary-level institutions is reserved for those students crossing republics to continue their education. The movement of students is mainly from nonRussian republics to Russian republic institutions. Ethnic minorities are subject to a *numerus clausus*.

With the exception of some prestigious Moscow, Leningrad and Kiev institutions, entrance examinations take place simultaneously throughout the Soviet republics. Applicants, therefore, have to weigh the academic standard of a school against their chance of admission. An All-Union university handbook is printed annually, detailing relevant application and examination dates and indicating the programs of study. All examinations are conducted in accordance with guidelines confirmed by the State Committee for Public Education.

Admissions examinations are required of all students who have completed preparatory courses offered by most universities, institutes, and polytechnics; those with an honorable discharge from the armed forces; and practicing teachers who are recommended by their teachers' councils. In spite of exemptions, some disciplines (e.g., art, architecture, physical education) require a candidate to present a portfolio or take special examinations. Secondary school graduates with a gold or silver medal for excellence or graduates of vocational secondary schools with excellent grades are asked to sit for one examination only, with the subject determined by the institutional admissions committee. If the subject is passed with a grade of 5 (on a scale of 5 to 1), exemption is granted from all other subject-examinations. Examinations are set by the individual institutions and may be oral or essay, or both. Major subject areas which are tested include Russian language and literature (or the primary language of instruction), a foreign language and subjects relating to the field of specialization (e.g., engineering or the physics-mathematics track requires mathematics [written and oral] and physics [oral]; chemistry and related technologies require chemistry [oral], mathematics [oral] and physics [oral]). The entire sequence of entrance examinations may be taken in Russian or in the language of the republic in which the institution of higher education is located.

Students who receive an "unsatisfactory" grade in one of the oral or written tests are not permitted to take any further examinations; however, they may re-sit the entire sequence of examinations in the following year. Retaking examinations to improve a grade is not allowed. Negotiations for better grades are not uncommon.

New Admissions Regulations. In Spring 1991 the State Committee for Public Education announced new rules to simplify the admissions process to university-level institutions.

- Uniform entrance requirements will be established for students who apply directly from secondary school and for those who have been employed. Priority will no longer be given to applicants with jobs.
- The age limit previously set at 35 will be eliminated.
- There will be no reserved admission (sometimes without an entrance examination) for former soldiers or workers sent to university-level institutions by their places of work. Special admissions consideration will only be given to invalids, orphans, and personnel released from military service.
- Special character reports and details of military service will be eliminated.
- Regulations barring students from taking admissions examinations to more than one institution will end.
- Permission will be given to graduates who have completed higher education to re-enroll.

The new rules set forth a model. Individual institutions will be allowed to decide on the number of students they will enroll and the type of admissions examination and grading scale they will use.

The State Committee for Public Education is still experimenting with its own optional entrance examination. It anticipates that students will sit for this test before the usual institutional admissions examinations and that this test, if successfully passed, will override the latter.

University, Polytechnic and Institute Programs

First Diploma Programs

In the Soviet republics students choose their fields of specialization before entrance to institutions of higher education. Application is made to a specific department rather than to the institution. The first two years of the curriculum are traditionally devoted to the study of social and natural sciences, with similar course requirements for all related specializations. Specialization begins in the third year and continues in the fourth and fifth years. Until 1987 up to 20% of academic time was assigned to practical experience, e.g., workshops, laboratories, study tours. A State Committee for Public Education policy document adopted in March 1987 stipulates that a typical tertiary-level program must be divided between foundation studies and core subjects (50%), general profile courses (35%) and the specialization (15%). Student contact hours are to be reduced from 34 to 40 weekly hours to 24 to 28 weekly hours.

Programs leading to the first diploma *(diplom ob okonchanii vysshego uchebnogo zavedeniia)* in higher education last four to five or five-and-one- half years (six years in medicine). Within this period, a student has between 4,500 and 5,500 hours of instruction in approximately 20 to 34 subjects, depending on the field of concentration.

The vast majority of undergraduate students in the Soviet republics follow narrowly specialized curricula that provide the theoretical and practical fundamentals for their field of specialization. In general, universities provide the theorists and scholars. Polytechnics and institutes train professionals in applied specialities. Based on specialty groupings, fields of specialization in higher education are numbered by the government's State Planning Commission. The list of specializations at institutions of higher education comprises more than 400 fields and is revised periodically as new fields are added or eliminated (see Appendix C).

Tertiary-level progams emphasize theoretical sciences, particularly mathematics and physics, and technical training at the expense of social sciences. Thus an undergraduate engineering student has to take history; a student in the humanities is required to study advanced mathematics and the sciences.

Generally, the curriculum incorporates core subjects over the five-year period, including foreign language, politics, military training and civil defense, physical education, and industrial work-training. Computer science and psychology courses have been added to core requirements under the curricular reforms of 1974. Political education is designed to increase the students' awareness of Soviet society.

Currently, all social science courses are undergoing a concentrated content review. Dogmatic approaches to the teaching of political science and philosophy subjects are being recast to accommodate democratic views. Courses such as dialectical and historical materialism, history of the Communist Party of the USSR, scientific communism, and communist ethics are being either renamed, revised, or totally eliminated. Greater choice in the selection of humanities courses is being accorded to the students by institutions. In general, approximately 60% of the curriculum will be reviewed for imminent changes whereas 40% will remain standard, subject to approval by the State Committee for Public Education.

Upon the completion of their studies, graduates of university-level institutions spend at least one year as trainees to acquire practical skills for their jobs. Tables 5.1 to 5.6 present the curricula for economics, civil engineering, electrical engineering, mechanical engineering, law, and literary studies, respectively.

New Degree Structure

A new degree structure, approved by the State Committee for Public Education, is being implemented gradually by some higher education institutions throughout the Soviet republics. The two stages of higher education being promoted resemble the U.S. bachelor's and master's degree structure. They are to be phased in gradually, based on an institution's ability to implement the change (e.g., it is to be in place at the Tomsk Polytechnic Institute and Irkutsk State University in September 1991).

The traditional five-year curricula are to be divided into two stages:

First stage. Three- to four-year programs of broad education in a specific discipline leading to the award of a *bakalavr* (bachelor's) degree.

Second stage. Two years of additional, specialized training leading to a *magistr* (master's) degree. This phase is to be financed by enterprises or businesses interested in hiring students who have completed their studies. Jobs will no longer be guaranteed; however, institutions will help students find employment contracts.

Although local variations on the revamped curricula are to be expected, it is evident that five-year diploma programs will continue to be offered at some institutions. Others will offer the traditional five-year curricula until they are supplanted by a three- to four-year *bakalavr* degree, followed by a two-year *magistr* degree.

It has also been proposed that up to 15% of course time be left unplanned to provide a slot for new and updated materials in science, technology, and the humanities.

Examinations

Grading

The grading system at tertiary-level institutions in the Soviet republics is the same at all levels (see Appendix A). The number of courses that may be completed with a *zachet* (credit) within a curriculum is determined by the department. Usually, no more than five examina-

Table 5.1. Five-Year Model Economics Program, Kiev Institute of National Economy

Specialization No. 0611

Subject	Lecture	Lab/Practice/ Seminar	Total
Political Science	72	98	170
Political Economy	136	170	306
History of Economic Thought	18	36	54
Philosophy	36	54	90
Theoretical Problems of Contemporary Socialism	36	44	80
History of National Economy	36	36	72
Soviet Law	36	54	90
Foreign Language		216	216
Physical Education			592
Higher Mathematics (General Course)	72	88	160
Theory of Probability & Mathematical Statistics	26	42	68
Mathematical Programming	26	46	72
Economic Information Science & Computer Technology	54	92	146
Computer Laboratory		54	54
System of Technical Branches in National Economy	54	66	120
Work Allocations in Economic Districts	30	42	72
Environmental Economics	28	14	42
Principles of Economic Management	24	32	56
Economics & Sociology of Labor	18	30	48
Planned Regulations of Economic & Social Development of the USSR	54	76	130
Price Structure	26	34	60
Statistics	80	90	170
Accounting	32	50	82
Principles of Economic Analysis	18	36	54
Credit & Finance	36	54	90
Economics of Enterprises	50	86	136
International Economic Relations	18	30	48
Attestation	10	10	
Civil Defense		54	54
Product Analysis	100	100	200
Management Systems of Production, Storing & Supply	64	74	138
Financial Resource Management in National Economy	72	98	170
Commercial Activity of Enterprises	64	88	152
Economics & Management of Optimal Trade Enterprises	86	106	192
Economic Management Mechanisms of Rational Use of Material Resources	34	46	80
Economic-Mathematical Management Methods & Models of Material Resources	54	68	122

Marketing	28	34	62
Internal Economic Activity	28	34	62
Industrial Intra-Structures	18	22	40
Ethics & Aesthetics	36		36
Logic	20		20
History & Theory of Religion & Atheism	20		20
History of World & National Culture	56		56
Electives (as determined by Department)			
Diploma Project or Thesis			variable

State Examinations: Political Economy
Specialization

Table 5.2. Five-Year Model Civil Engineering Program, Patrice Lumumba People's University

Specialization No. 2903

Subject	**Lecture**	**Lab/Practice/ Seminar**	**Total**
History of Soviet Society	51	51	102
Philosophy	68	68	136
Philosophical & Methodological Problems in Science & Technology	17	17	34
Political Economy	76	62	138
Scientific Communism	45	31	76
Foreign Language		464	464
Physical Education		136	136
Introduction to Specialization	34		34
Higher Mathematics	221	238	459
Chemistry	34	68	102
Physics	136	136	272
Theoretical Mechanics	85	102	187
Descriptive Geometry & Drafting	34	170	204
Engineering Geodesy	51	51	102
Construction Materials	51	51	102
Metals & Welding Technology	51	17	68
Strength of Materials	119	85	204
Hydraulics & Hydraulic Machines	68	68	136
Electrical Technology & Electronics	68	51	119
Principles of Civil Construction	62	62	124
Principles of Hydro-Technical Construction	62	62	124
Water Supply & Sewerage	34	17	51
Heat, Air Conditioning & Climate Control	48	31	79
Construction Mechanics	127	79	206

Subject	Lecture	Lab/Practice/ Seminar	Total
Soil Mechanics	65	31	96
Reinforced Concrete & Concrete Structures	90	76	166
Metal Structures	62	31	93
Construction Machines	45	45	90
Reconstruction of Civil & Industrial Buildings	34		34
Highways	65	48	113
Land Reclamation	62	48	110
Computer Science & Programming	31	65	96
Work Safety	45	31	76
Branch Economics	42	14	56
Engineering Geology	51	34	85
Management Automation Systems	17	34	51
Principles of Soviet Law		34	34
Courses in Specialization	353	353	706
Diploma Project			14 weeks

State Examinations: Philosophy

Table 5.3. Five-Year Model Electrical Technology Program, Kiev Polytechnic Institute

Specialization No. 2005

Subject	Lecture	Lab/Practice/ Seminar	Total
History of the Communist Party of the USSR	100	20	120
Marxist-Leninist Philosophy	80	90	170
Political Economy	120	20	140
Scientific Communism	70	70	140
Soviet Law	30	4	50
Foreign Language	140	160	300
Industrial Economics	70	30	100
Industrial Organization & Planning, with Management	110	90	200
Physical Education	-	560	560
Military Training	-	600	600
Civil Defense	40	20	60
Work Safety & Environmental Protection	50	30	80
Computer Science & Programming	80	60	140
Higher Mathematics	300	300	600
Physics	200	150	350
Chemistry	70	30	100
Applied Mechanics	100	50	150

Subject	Lecture	Lab/Practice/ Seminar	Total
Descriptive Geometry & Engineering Graphics	60	110	170
Measurements, Methods & Experimental Techniques	45	15	60
Electro-Technical Materials & Elements of Industrial Electronics	50	50	100
Theoretical Principles of Electro-Technology	250	130	380
Physical Principles of Electronic Technology	90	50	140
Electronic & Ionic Devices	50	50	100
Semiconductor Devices	100	80	180
Mathematical Models	90	110	200
Analytical Methods & Calculation of Electronic Schemas	50	50	100
Elements of Magnetic Technology	50	50	100
Electronic Chains	160	90	250
Course Projects	-	80	80
Micro-Electronics & Micro-Technology, with Project	70	100	170
Pre-Standardization Technology, with Project	100	100	200
Microprocessors & Microprocessing Technology	70	90	160
Industrial-Electronic Devices	70	60	130
Special Industrial-Electronic Devices	100	50	150
Specialization	580	548	1,128
Departmental Required Courses	-	200 appr.	200
Diploma Research & Project	-	860	860

State Examinations: Marxism-Leninism
Specialization

Table 5.4. Five-Year Six-Month Model Mechanical Engineering Program, Kiev Polytechnic Institute

Specialization No. 1201

Subject	Lecture	Lab/Practice/ Seminar	Total
History of the Communist Party of the USSR	56	64	120
Marxist-Leninist Philosophy	44	44	88
Political Economy	58	82	140
Scientific Communism	38	42	80
Soviet Law	28	14	42
Machine Building Economics	36	54	90
Industrial Organization & Planning	48	48	96
Industrial Management	18	36	54
Labor Safety & Environmental Protection	28	32	60

Subject	Lecture	Lab/Practice/ Seminar	Total
Foreign Language	-	279	279
Chemistry	54	45	99
Physics	139	149	288
Higher Mathematics	-	-	-
Computer Science, Programming & Mathematical Models	70	70	140
Theoretical Mechanics	104	114	218
Descriptive Geometry & Engineering Graphics	36	158	194
Technological Processes of Machine Construction	69	52	121
Strength of Materials	105	88	193
Material Science	54	45	99
Electrical Technology	36	27	63
Electronics	34	26	60
Microprocessing Technology	36	27	63
Theory of Machines & Mechanisms	68	35	103
Interchangeability, Standardization & Technical Measurements	54	36	90
Theory of Cutting	54	70	124
Thermal Processes in Technical Systems	17	17	34
Principles of Machine Construction	88	70	158
Principles of Machine Construction Technology	102	85	187
Instrumentation Safety in Automated Industries	70	53	123
Hydraulics	18	91	109
Metal-Cutting Machines	105	88	193
Theory of Automation	48	25	73
Principles of Automated Planning	34	26	60
Military Training	-	360	360
Civil Defense	-	50	50
Physical Education	-	620	620
Automated Machines & Industrial Projects	48	48	96
Complex Technological Processes	72	36	108
Planning & Industrial Procurement	51	34	85
Automation of Industrial Processes & Machine Construction	54	54	108
Mathematical Models & Optimization of Technological Systems	36	45	81
Technological Planning	54	45	99
Technical Processes	42	57	99
Mechanical Shop Planning	28	22	50
Courses in Specialization	142	267	409
Departmental Required Courses	-	192	192
Diploma Project			14 weeks
State Examinations:	Marxism-Leninism		
	Specialization		
	Defense of Final Project		

Table 5.5. Five-Year Model Law Program, Patrice Lumumba People's University

Specialization No. 0211

Subject	Lecture	Lab/Practice/ Seminar	Total
History of Soviet Society	70	70	140
Political Economy	136	136	272
Philosophy	68	68	136
Scientific Communism	51	34	85
History of Political Thoughts	60	47	107
Problems in Sociology	18	18	36
Foreign Language		602	602
Introduction to Specialization	8		8
General History of State & Law	146	122	268
Theory of State & Law	122	104	226
Logic	18	18	36
Roman Law	17	17	34
Organization of the Court & Procurator's Office	36	36	72
State Law	152	117	269
Administrative Law	83	68	151
Civil & Family Law	184	184	368
Agricultural & Kolchoz Law	36		36
Criminal Law	176	113	289
Criminal Procedure	79	79	158
Civil Procedure	94	64	158
Labor Law	107	94	201
International Public Law	73	73	146
Commercial Law	60	60	120
International Private Law	70	35	105
Finance Law	68	34	102
Criminology	34		34
Criminal Law	34	34	68
Principles of National Economic Management	34		34
Critique of Zionist Ideology	17		17
Psychology (General & Special)	18	18	36
Legal Labor Protection	17	17	34
Legal Environmental Protection	36	36	72
Theoretical Problems of State & Law	36	18	54
Physical Education		136	136
Principles of State Administration	26	26	52
Principles of the Individual Under Law	13	13	26
Diploma Thesis			variable

State Examinations: Theory of State & Law
Philosophy
Specialization

Table 5.6. Five-Year Model Literary Studies Program, A. M. Gorki Literary Institute

Specialization No. 0216

Subject	**Lecture**	**Lab/Practice/ Seminar**	**Total**
History of the Communist Party of the USSR	56	64	120
Analytical Problems in the History of the Communist Party of the USSR	50		50
Marxist-Leninist Philosophy	60	80	140
Political Economy	58	82	140
Scientific Communism	30	38	68
History of the USSR	70		70
World History	70		70
History of Philosophy	70		70
Marxist-Leninist Aesthetics	70		70
Principles of Scientific Atheism (changed to History of Religion)	34		34
Soviet Law	36		36
Foreign Languages		490	490
Introduction to Literary Studies	58	12	70
Oral Folk Art	28	6	34
History of Russian Literature	258	48	306
History of Soviet Literature	140		140
Seminar in Contemporary Soviet Literature		300	300
History of Foreign Literature	280		280
Introduction to Linguistics	36		36
Contemporary Russian	100	100	200
Orthography & Punctuation Practice		70	70
History of Russian Literary Language	48	22	70
Russian Stylistics	70	70	140
Editing Theory & Practice	32	18	50
Studies in Literary Crafts (Poetry, Prose, Drama, Literary Criticism, Translation)		450	450
Courses in Specialization	360	120	480
Civil Defense	30	6	36
Physical Education		140	140
Diploma Project or Thesis			variable

State Examinations: Marxism-Leninism
History of Russian & Soviet Literature

tions are taken each semester, with the remainder of the courses receiving a *zachet*.

State Examination Commission

Traditionally, the Commission functions as an examining body for the first diploma awarded by a tertiary-level institution. The chairman of the Commission is appointed by the State Committee for Public Education on the recommendation of the rector of the institution attended by the student. Members of the Commission are appointed by the rector. The Commission, with 10 to 12 members, includes four or five industry representatives; the rest come from the institution's faculty. Guidelines and recommendations provided by the Commission to the institution are weighed heavily in determining the qualification of a candidate seeking to obtain a diploma. A student is asked to defend his or her diploma project or thesis before representatives of the Commission under whose authority the final diploma is awarded. Most probably the function of the Commission will be significantly modified once individual institutions begin to award diplomas without the imprimatur of the Commission.

Study Load

The academic year, which begins September 1, has two terms of approximately five months each with a brief break in between and a two-month vacation in the summer, generally used for practical work. First-year students usually enroll for 36 hours of lectures, seminar and laboratory work per week. This decreases to 32 hours in the second year, 30 hours in the third year and 24 hours in the fourth year, with even smaller contact hours in the fifth and final year of study. Attendance at lectures is usually not mandatory. However, a department reserves the right to designate specific courses which require mandatory attendance. Little time is left for background reading and independent work. At least 20% of academic time is assigned to practical exercises and laboratory work, particularly in technical and science curricula.

Laboratories vary greatly with regard to facilities and equipment. Although the universities conduct theoretical research of frequently high quality, they appear to have less up-to-date laboratory equipment than the polytechnic institutes.

At the conclusion of each semester, in addition to passing four or five examinations, a student is required to complete satisfactory essays and seminar papers determined by the department. Normally, semester-end examinations are oral. Two course failures in one semester permit the student to retake the examinations prior to the start of a new academic year; three failures in one semester disqualify the student from further enrollment. Re-admission is possible after one year, provided evidence is produced that the student has been employed for that year. During the course of a program, students pass at least 35 to 40 examinations.

In the final year of study (except for education, medicine, and veterinary medicine), students are required to prepare a diploma thesis or a diploma project which represents an independent study effort. The diploma thesis or the results of the diploma project must be defended before a board of examiners consisting of professors and representatives of the State Examination Commission of the State Committee for Public Education. Should a student fail the State examinations, Committee regulations stipulate that the examinations may be retaken during the course of three years.

The diploma is traditionally awarded by authority of the State Examination Commission and the graduate is designated as a "specialist" *(spetsialist)*. As institutions gain their autonomy, degrees and diplomas will be awarded directly by the institutions.

Evening and Correspondence Education

An important difference between the Soviet system of education and that of western countries is the large number of Soviet students enrolled in evening and external or correspondence programs. Employed people are entitled to paid leave to pursue their studies.

Evening and correspondence education are an integral part of the Soviet system of higher education. Programs duplicate those offered during the day, although complaints are heard that standards are lower among evening and correspondence students. Out of a total of 5,147,000 students in 1985-86, 2,763,000 were enrolled on a fulltime basis, 634,000 studied in the evening, and 1,750,000 registered through correspondence. Diplomas granted are the same as those awarded for fulltime study.

Most fulltime programs leading toward a degree are also available to evening and correspondence students, with the exception of those offered by medical and art schools and a limited number of higher technical institutes.

Advanced Degrees and Research

Candidate of Sciences

The candidate of sciences *(kandidat nauk)* is the first advanced academic degree in the Soviet republics. It is to be noted that the term "science" is used more broadly across all republics than is the case in the United States. This degree can be obtained in almost any field of study.

The *kandidat nauk* has traditionally been awarded by the Highest Attestation Commission (Vysshaia attestatsionnaia komissia/VAK) under the auspices of the Council of Ministers, in conjunction with the Council of the academic institution where research was conducted and completed.

The role of the Highest Attestation Commission under *perestroika* is being redefined in view of greater institutional autonomy and independence moves by the republics. The Committee will, no doubt, retain an advisory role and continue to maintain an archive of thesis synopses. Professional councils (consisting of at least nine and not more than 21 members) of experts in fields of specialization (of which there are approximately 3,000) under the auspices of the State Committee for Public Education and in conjunction with the institution of higher education now reserve the right to establish criteria for the award of a *kandidat nauk* degree.

Admission to the *kandidat* follows the completion of the first tertiary-level degree *(diplom)* with an overall grade of "excellent" or "good" and the passing of qualifying examinations in a foreign language, philosophy (formerly Marxist-Leninist philosophy), and in the field of specialization (problem- solving questions with minimal theory).

The *kandidat nauk* is granted after at least a three-year period *(aspirantura)* of guided research and completion and public defense of a thesis *(dissertatsiia)*. A preplanned sequence of lecture attendance is not required of students seeking the *kandidat nauk* degree. It is not uncommon, however, for students to participate in courses on a voluntary basis. The student need not necessarily demonstrate an ability for original primary research, even though this often happens. The thesis, which may be written in the language of a Soviet republic, is perhaps less reliant on primary research than on formatted prescriptions of common practice, particularly in the humanities. Hence, scope and quality of thesis research for the *kandidat nauk* deserve careful review to determine whether it extends beyond master's thesis research completed at U.S. institutions and whether the quality of research merits review at the doctoral level. The length of the thesis is about 150 pages and must be published in advance.

For the defense of the thesis, two official reviewers are appointed to critically review the content. A synopsis *(avtoreferat)* of the thesis is sent to approximately 100 institutions and individuals for comment, at the same time a date is set for the public defense of the thesis and an official opponent is nominated. These proceedings are managed by a commission of the institution or research institute at which the graduate research was done. Following the receipt of all comments, a scientific council reviews the thesis and votes upon the merit of the work. Approval by two-thirds of the votes cast by secret ballot determines whether or not the degree is awarded. The recipient of the *kandidat* degree is granted the title of specialist-researcher *(spetsialist-issledovatel')*.

Doctor of Sciences

The doctor of sciences *(doktor nauk)* degree is awarded solely by the Highest Attestation Commission (vysshaia attestatsionnaia komissia/VAK) in conjunction with a professional council of experts in the field of specialization.

The doctor of sciences *(doktor nauk)*, the highest academic qualification awarded in the Soviet republics, parallels the requirements of published research for faculty promotion in the United States. Highly research-oriented, this qualification is obtained by senior scholars (whose average age is often 40 plus). The *doktor nauk* gives the holder the right to become a full professor or head of a department at tertiary-level institutions, a position and title conferred by the State Attestation Commission of the State Committee for Public Education.

To be eligible for the *doktor nauk* degree, a candidate must be under 40 years of age. To be awarded the degree, the completion of a major dissertation that includes results of fundamental scientific or applied significance is required. The content of the dissertation must be based on original research. In addition, 10 to 20 published scientific papers are required. After publication of the dissertation, the work is submitted to an academic council which is composed of VAK representatives and specialists in the field. A secret ballot by peers determines whether the *doktor nauk* is awarded. Results must be approved by the VAK.

In cases where quality of the research and dissertation is high, a *doktor nauk* degree may be awarded immediately following the *kandidat nauk*.

Research Institutions

Research in the Soviet republics is conducted at the following State institutions: the Academy of Pedagogical Sciences, the Academy of Sciences, the All-Union V. I. Lenin Academy of Agricultural Sciences, the Academy of Medical Sciences as well as universities, polytechnics, and pedagogical institutes.

The vast network of research activities throughout the Soviet republics is difficult to coordinate, and the problem of quality control and duplication of research topics is an endemic concern of Soviet educational authorities.

The Academy of Pedagogical Sciences

Founded in 1966, the Academy of Pedagogical Sciences (Akademia pedagogicheskikh nauk) is under the aegis of the State Committee for Public Education. It has approximately 350 full and 175 affiliated or corresponding members who are elected by all participating members. Scientific research institutes are attached to the individual republic ministries of education whose research activities are also coordinated by the Academy of Pedagogical Sciences. Membership in the Academy represents the highest level of professional standing for an education researcher.

Overall coordination of education research is the responsibility of the Academy of Pedagogical Sciences. Its principal concern, however, is elementary and secondary education. In 1968 the Academy appointed a Coordination Council, consisting of research directors from various areas of the Soviet Union who monitor ongoing research activities.

The Scientific Research Institute for the Study of Problems of the Higher School functions as the only independent unit, with its own Coordinating Council and Coordination Plan. The Institute has 10 departments *(otdely)* and a Division of Computer Technology provided for the organization. The Institute is concerned with problems in higher education and specialized secondary education.

The Academy uses a classification system of five-year plans to keep track of past and ongoing research and to coordinate future research. Each institute involved in research submits a tentative plan to be reviewed and approved by the Academy's Coordinating Council. Research of national importance is supervised by the Academy.

The largest of the Council divisions of the Academy is the Division of Didactics and Special Methods which supervises four research institutes *(Nauchno-issledovatel'skie instituty)*. The Division of Theory and History of Pedagogy also supervises four research institutes. The Division of Psychology and Growth Physiology supervises three institutes. The Division of Pedagogy and Psychology of Vocational-Technical Education has under its supervision a newly formed Institute of Administration and Economics of Public Education and the new Institute of Information Science and Computer Technology. Both the Academy and the Institutes have considerable interest in comparative education research. A major library and a publishing house are also part of the Academy's operations.

Candidates doing research at a research institute qualify for the award of a *kandidat* or *doktor* degree, subject to all requirements for the granting of the degree prescribed by the Highest Attestation Commission.

The Academy of Sciences

The Academy of Sciences (Akademia Nauk) is perhaps the most important research institution in Soviet sciences. It is unlike any scientific institution in the West. The Academy's activities have been devoted principally to fundamental research. However, there is considerable pressure from the field to undertake applied research.

Membership in the Academy denotes scientific status and merit. Members are elected to either full, affiliated or corresponding membership by secret ballot. Foreign members are also elected.

Administratively, the Academy is subordinated to the All-Union Council of Ministers. As executive officer, the president of the Academy is elected by its membership for four-year (renewable) terms. The chief scientific secretary *(glavnyi uchenyi sekretar)* acts as the president's chief executive. Eight vice-presidents are responsible for a broad spectrum of scientific activity. The presidium functions as the collegial body and is composed of the president, vice-president, chief scientific secretary, the academician secretaries, heads of the Academy's regional centers and other leading scientists.

The Academy coordinates research conducted in the Soviet Union, not just in its own institutes. It has an extensive network of research institutes, with approximately 250 research institutes employing 55,583 scientists (1986) and a total staff of 200,000. The Academy maintains regional centers *(nauchnye tsentry)* in such areas as the Urals, Far East, Bashkiriia, Dagestan, Kazan, Kereliia, Komi, and Kola. Branch academies *(otraslevye akademii)* have been established to include the Academies of Medical Sciences, Pedagogical Sciences (described above), and the V.I. Lenin Academy of Agricultural Sciences.

The Academy's Siberian Division, based in Novosibirsk, is an important branch. Founded in 1957 to disperse the Academy's activities and encourage the development of Siberia and the Far East, this Division has perhaps more autonomy than a disciplinary department inasmuch as it is subordinate to the Academy presidium and the Council of Ministers of the Russian Soviet Republic. It was in Novosibirsk that the Soviet Union pioneered the *akademgorodok*, a "science city" relatively self-contained in terms of research and social infrastructure. The idea of *akademgorodok* has since been duplicated in Serpukhov, Dubina, Chernogolovka, and Pushkino. Each republic of the Soviet Union, except Russia, has its own academy, subordinate to the All-Union Academy and the Council of Ministers of their republic.

Presently there are 17 disciplinary departments *(otdeleniia)* in the Academy, divided into four sections *(sektsii)*. Each department is headed by an academic secretary, usually a senior scientist, responsible for the progress of a particular field of science. The departments are:

- Physical-Technical and Mathematical Sciences Section:

Department of Mathematics
Department of General Physics and Astronomy
Department of Nuclear Physics
Department of Physical-Technical Problems and Control Processes
Department of Information Sciences, Computer Technology and Automation

- Earth Sciences Section:

Department of Geology, Geophysics and Geochemistry
Department of Oceanology, Atmospheric Physics and Geography

- Chemical-Technical and Biological Sciences Section:

Department of General and Technical Chemistry
Department of Physical Chemistry and Inorganic Materials Technology
Department of Biochemistry, Biophysics and Chemistry of Active Physiological Compounds
Department of Physiology
Department of General Biology

- Social Sciences Section:

Department of History
Department of Philosophy and Law
Department of Literature and Language
Department of Economics

All-Union V. I. Lenin Academy of Agricultural Sciences

Founded in 1929, the Academy supervises the research activities of 24 national research institutes, many regional institutes, experimental and breeding stations, laboratories, dendraria, and arboreta.

Academy of Medical Sciences

Founded in 1944, the Academy has 45 research institutes and research centers as well as research laboratories under its jurisdiction.

Scientific Research Institutes

Research institutes may be found in the areas of agricultural and veterinary science; architecture and town planning; the arts; the specialized fields of medicine and pharmacy, technology, religion, sociology and anthropology.

Research at Universities, Polytechnics and Pedagogical Institutes

Universities are principally engaged in theoretical research. Polytechnics stress applied research activities, although theoretical studies may also be conducted. Pedagogical institutes and the Soviet teacher training institutions for elementary and secondary levels are also engaged in education research usually carried out in problem laboratories *(problemnye laboratorii).*

Libraries

Republic and Autonomous Regional, City and Town, and District Libraries

Libraries of the Central Ministry of Culture serve the country as a whole by administrative subdivisions, including libraries at the republic, regional, city and town, and district levels. Within this system there are also special independent rural and children's libraries as well as libraries attached to clubs organized by the Ministry.

Toward the end of 1986, the Soviet system included approximately 326,000 libraries (134,000 public; 50,000 scientific, technical and specialized; and 142,000 school and children's homes libraries). Each republic and autonomous region has at least one large public library in the principal town, while remote areas are served by traveling libraries.

Significant work is done in the area of bibliographies and abstracting. The most noted center for bibliographic activities is the All-Union Institute of Scientific and Technical Information, administered by the Academy of Sciences and the State Committee for Coordination of Scientific Research. This Institute is a centralized service for Soviet researchers and engineers and furnishes materials from around the world on current developments in their field of specialization.

Libraries at Institutions of Higher Education

Research materials at most urban university libraries are extensive. Few libraries, however, are computerized or have adequate copying facilities. Standard card catalogues are still widely used, with materials searched for and retrieved manually. In the main, priority is accorded to applied research which is principally conducted at polytechnic institutes. Hence, library and computer facilities at these institutions are much more up-to-date. Card catalogues are being computerized, e.g., at Kiev Polytechnic Institute, where students have access to computer laboratories and an inter-library system for material-loan is in place.

VI. THE ARTS

All education in the arts follows the traditional pattern in elementary, secondary, specialized, and higher education. Art education may also occur outside these structures through the peoples' universities, public lecture series, youth extracurricular institutes or programs for private enrichment (see Chapter IX. Other Forms of Education). Nontraditional studies yield certificates of completion, but the studies completed are not recognized as substitutes for traditional education.

Architecture

The first professional degree in architecture follows a five-and-one-half year program of study. Five years are spent in coursework. During the summer following the fifth year, the student works in an architectural firm on an assigned project. The final year is spent preparing the diploma project, although this can often be completed in one semester. Architecture may be studied in an Institute of Architecture, an Art Institute or a Construction-Engineering Institute.

Architects major in specializations 2901 – Architecture or 2902 – Artistic design of urban, rural and park architectural ensembles (see Appendix B). Within architecture, typical specialities, as offered at the Moscow Institute of Architecture, are urban construction, residential architecture, industrial architecture, agro-industrial architecture, theory and history of architecture, restoration of architectural monuments, architecture of the interior and landscape architecture.

The Moscow Architectural Institute currently offers a "Bachelor" degree to foreign students. Students who are not recommended for continuation after a third-year review are enrolled for one additional (fourth) year and awarded a Bachelor degree. Those recommended for further study continue for three more years to the diploma. Table 6.1 gives the curriculum for the *diplom* degree in architecture.

Graduate work follows the candidate degree pattern for universities. The Moscow Architectural Institute sponsors two councils for graduate degrees in architecture and in urban planning. Outstanding architects may be awarded a Doctor of Sciences degree by the Institute's council on the basis of their career work in architecture.

Fine Art

Fine arts instruction is offered in specialized secondary and higher education institutions. At the specialized secondary (SSUZ) level, the arts specializations prepare students for careers in art production, artistic "shops," extracurricular art club leadership, restoration and reconstruction work, and other, primarily applied art careers. Lower secondary graduates complete a program of four years and upper secondary graduates a program of three years. Upon completion, they receive a Diploma of Completion of Specialized Secondary Education. (See Appendix B for a list of specialties.)

At the tertiary level, the oldest art institutes are the I. E. Repin Institute of Painting, Sculpture, and Architecture in Leningrad (established in 1757) and the Surikov State Art Institute in Moscow (established in 1832). Both are under the USSR Academy of Arts and teach Realism only. Art students follow a six-year degree program in painting, graphics, and sculpture or a five-year program in criticism. The first five years of the programs are spent in coursework, the sixth year in the preparation of a diploma work. Specializations and specialities are offered at the Surikov Institute in painting (easel, monumental, theatrical); graphics (easel, book illustration, or poster); sculpture; and aesthetics. The former three lead to the qualification of artist, the last to the qualification of historian/art theoretician. After the completion of their fourth year, students embark on a two-month extramural assignment to learn to copy works in galleries and museums and architectural monuments. Table 6.2 gives the curriculum for easel painting. Appendix C lists other specialties offered at institutions of higher education.

Experimentation with modern art forms is openly and philosophically discouraged. The general philosophy is to teach skill, craft, technique, appreciation, aesthetics, and critical abilities. The artist's creativity is expected to flourish after leaving the confines of the art institute. The curriculum builds on cumulative skill development. In the first year, painting students complete 400 hours of drawing, focusing on the head and male nude. In the second year, students focus on the male and female nude. In the third year, students are assigned to a studio with the professor remaining the student's mentor. Third-year practice focuses on the nude and clothed figure, motion, clothing and inde-

Table 6.1. Five-and-One-Half Year Curriculum for Architecture, Moscow Architectural Institute

Specialization: 2901, Architecture

Admission: Secondary school graduation, competitive entrance

Course	Class Hours	Lab/Indep Hours	Total
History CPSU	182	122	304
Philosophy	78	62	140
Aesthetics	62	46	108
Economics	120	120	240
Communism	32	44	76
Soviet Law	30	14	44
World Culture	24	-	24
Foreign Language	124	156	280
Higher Mathematics	32	28	60
Building Mechanics	142	130	272
Planning Technique	90	52	142
Architectural Materials	90	46	136
Architectural Construction	120	115	235
Construction Site Technology/Safety	62	46	108
Construction Economics	62	46	108
Construction Organization	40	30	70
Geodesy	32	14	46
Site Preparation	62	42	104
Building Engineering Equipment	62	42	104
Building Physics	116	100	216
Descriptive Geometry	130	94	224
Drawing	380	180	560
Painting	136	40	176
Sculpture	85	40	125
Art History	82	48	130
History of Architecture	60	48	108
Russian Architecture	64	34	98
Urban History	60	48	108
Soviet Architecture	30	24	54
Foreign Architecture	20	20	40
Problems of Architecture & Urban Planning	30	20	50
Introduction to the Profession	32	22	54
Architectural Typology of Buildings	30	20	50
Theory of Urban Planning	30	14	44
Ecological Issues	30	14	44

Volume/Distance Planning	124	146	270
Basics of Architecture Planning	380	420	800
Architectural Planning	490	554	1,044
Civil Defense	52	26	78
Disciplinary Specialized Courses (Residential Architecture)			
Sociology of Residential Buildings	12	-	12
Theory of Architectural Composition	30	21	51
Special Course on Construction & Engineering Equipment	70	-	70
Rural Building Projects	12	-	12
Practical Work		29	29
Course Project		284	284
Total			7,332

Table 6.2. Six-Year Curriculum for Painting, Surikov Art Institute.

Admission: Secondary school graduation, competitive entry

Subject	Classroom	Practical	Total
Philosophy	58	62	120
History of Russian Art	174		174
History of Foreign Art	290		290
Foreign Language		232	232
Political Economy	80	120	200
Aesthetics	40	30	70
Scientific Communism	20	50	70
Soviet Law	30		30
Ethics	30		30
History of Philosophy	30		30
Scientific Atheism	24		24
History of World Culture	90		90
Supervised Drawing		1,160	1,160
Independent Studio Drawing		580	580
Supervised Painting Studio		1,334	1,334
Independent Painting Studio		1,276	1,276
Composition		261	261
Perspective	58	58	116
Plastic Anatomy	58	58	116
Techniques and Materials	58	44	102
Anatomical Drawing/Modeling		116	116
Synthesis of Art & Architecture	58		58
Special Course: Architecture	14		14
Copying		116	116
Civil Defense	18	22	40
Special Course: Painting	116		116
Practicum		1,504	1,504
Physical Education		580	580
Pre-diploma practicum		396	396
Diploma Work	-	-	
Total			**9,245**

pendent portraiture. In the fourth year, students bring these skills together through the production of two-figure paintings with complex set-ups and interior backgrounds. In the fifth year, students concentrate on two-figure paintings of greater complexity and on spatial problem solving.

Unlike many Soviet institutions of higher education which had already dropped or wholly rewritten their political theory courses into more general political science, philosophy, or social science courses, the Surikov Institute was only beginning to move in this direction in the fall of 1990, still retaining the History of Dialectical Materialism as a basic required course (largely owing to the unavailability of faculty).

More avant-garde and modern art forms are tolerated and/or taught at many of the art institutes in the nonRussian republics. In all of the arts there is presently a renaissance of interest in ancient Russian art, Orthodox art, and ethnic folk art. Although most restoration training is done at the specialized secondary level, Ancient Russian art is offered as a speciality at the Repin Institute. Moreover, students of monumental art, an art form rarely found in western art institutes, are also taught restoration and reconstruction techniques.

One of the more prestigious art institutes is the Moscow Higher Industrial Arts College (actually called an *uchilishche*, like specialized secondary schools, and better known by its original name, the Stroganov Academy (since 1825). The Stroganov Academy offers a specialization in restoration work in its faculty of monumental and decorative applied arts which also includes monumental painting, architecture, graphic design and packaging, ceramics and stained glass. Other faculties at the Stroganov Academy are the faculties of interior design and furnishings and industrial arts (crafts in metal, wood and plastic and product design). The craft faculty offers a special two-year applied craft program.

Admission to an art institute is competitive. Most art students enter after completing an art *uchilishche*, although students may also enter directly from an upper secondary school. Each specialized secondary art school is assigned to an art institute faculty member who recruits and assesses students in that school. Students who receive a diploma with distinction are invited to take the examinations for the art institute. Those successful in the examinations present a portfolio. The Surikov Institute accepts approximately 45 to 50 new first-year students each year, with one place reserved for each republic.

Graduate study for a candidate's *kandidat nauk* degree is restricted to foreign students and is offered in theoretical studies only. No graduate programs have been offered to Soviet students since 1963. However, Soviet students may enter a program called the *assistentura*. This program requires two years of apprenticeship under a leading artist, four examinations assigned by specialty, specified hours of practice teaching, an exhibition, and a methodological abstract. The *assistentura* does not lead to a degree. Rather, it leads to the academic title of *dotsent* (lecturer) which confers the right to teach at an institution of higher education.

Music

Music education is discussed in terms of a unified music education. There are special childrens' music schools for children from 7 to 14 years of age. The most talented students will, if able, enter one of the general secondary schools attached to a conservatory where the greater parts of their schedules are devoted to music with minimal coverage of general secondary subjects. Most conservatory students enter directly from the general secondary schools attached to conservatories. Less common is the entry of students who attend one of the specialized secondary music *uchilishche*. The *uchilishche* is considered a terminal career program for students who will work in a band, in extracurricular music instruction and in community music activities.

Competition for entry into a conservatory may find five applicants for each space, as at the Rimskii-Korsakov Conservatory in Leningrad, where applicants must pass examinations in music, literature, Russian and a foreign language; undergo an interview; and audition in performance, hearing, and harmony. There is no shortened time to the degree for graduates of musical *uchilishcha*, who, if successful, may enter the first year of the conservatory. (See Table 6.3 for the program in directing with a specialty in opera-symphonic direction.)

Conservatories in the Soviet Union are institutions of higher education, and their degree programs parallel first degrees in universities and institutes. Curricula for conservatories are set by the Ministry of Culture's Methodological Office, but the individual programming is done at the conservatory which may offer unique programs as, for example, in church music or Russian Orthodox folklore.

Table 6.3. Five-Year Curriculum for Directing, Rimskii-Korsakov State Conservatory

Speciality: Opera-Symphonic Directing
Admission: Secondary school graduation, competitive entry
Qualifications: Director of a Music Theater; Director of Symphonic Orchestra

	Hours		
Subject	**Lecture**	**Practice**	**Total**
History	100		100
Philosophy	120		120
Political Economy	80		80
Scientific Communism	70		70
Aesthetics	70		70
Soviet Law	28		28
Music History	384		384
Music Theory	105	105	210
Solfeggio		70	70
Piano		178	178
Foreign Language		120	120
Elective	105		105
Directing		600	600
Orchestral Instrument Playing Technique	32	108	140
Study of Instruments	36		36
Reading Partitur		100	100
Instrumentation		106	106
History of Orchestral Styles	34		34
Work with Chorus		18	18
Work with Vocalists	10	24	34
Fundamentals of Opera Direction	10	60	70
Opera & Ballet Repertoire		104	104
Opera Practicum		584	584
Specialized Subjects	210	54	264
Civil Defense	40		40
Practicum		520	520
Electives in Major	280		280
Total			**4,465**

There are 22 conservatories in the Soviet Union. Institutes of Art and Institutes of Culture are equivalent to conservatories. Students all take pedagogic practice as an elective in order to obtain the qualification of musician-instructor upon graduation. However, most upper secondary school and specialized secondary school music faculty are trained in either musical *uchilishcha* or pedagogical institutes. Only the Astrakhan Conservatory has been offering music education as a specialization, and this program was being phased out as of Fall 1990.

Conservatory degrees are awarded after five years of study. Specializations in music lead to a variety of qualifications which are noted on the diploma. They denote an order of quality or capability of the student. In performance majors like piano or string instruments, the hierarchy of qualifications is as follows: concert performer (highest); orchestral artist; chamber ensemble artist; and finally, instructor (lowest). In voice or choir direction, the qualifications are either opera and concert vocalist or choirmaster on the one hand, or instructor on the other. The hierarchy of music theory degree qualifications is as follows: lecturer in music theory; critic; editor; organizer of musical activities (for community work, clubs, theater management, booking); instructor; and researcher (lowest).

Like art institutes, the national conservatories tend to be aesthetically conservative. Jazz studies are unknown except in republic conservatories. However, at least the Rimskii-Korsakov Conservatory had already removed its political courses by late 1990, substituting philosophy and social science electives.

Graduate study for music theory requires two years of class and independent study plus at least one year devoted to a dissertation. In performance, graduate study consists of a two-year *assistentura* with no dissertation and requires an apprenticeship with a leading artist, examinations, specified hours of practice teaching, and performance requirements. It leads to an academic title rather than to a candidate's *(kandidat)* degree.

VII. HEALTH PROFESSIONS

The ministries of health at each republic level, in cooperation with the State Committee for Public Education, establish all parameters for medical personnel training. Curricula in medicine and related health professions are uniform throughout the republics. Programs of study are generally reviewed and updated every five years.

Dentistry

There are two types of dental care providers in the Soviet educational system: the physician with specialization in stomatology *(vrach po special'nosti stomatologii)* who is trained in medical-stomatological institutes (established in 1936) or in stomatological departments of medical institutes, and the dentist *(dentist)*, a paramedical worker who completes training at a specialized secondary school or *uchilishche*. Their status is comparable to other paramedical personnel such as feldshers and midwives.

Stomatologists. Medical-stomatological institutes are autonomous institutions headed by a rector. They maintain their own clinics and teaching staff. Stomatological departments of medical institutes are part of the administrative structure of such institutes. Students in stomatology follow theoretical courses and general medicine together with medical students.

Admission to stomatological programs is similar to admission to other institutions of higher education in the Soviet republics, with entrance examinations in Russian language and literature, physics, chemistry, and a foreign language. The Russian language examination is being replaced by a language test in the native language of a specific republic in which the institution is based. Preference is given to applicants who have had practical experience since leaving secondary school. Enrollment is set by the Ministry of Health and ministries of health at the republic level.

Program. The curriculum, prescribed by the State Committee for Public Education in conjunction with the Ministry of Health, is the same as that used at stomatological institutes and stomatology departments of medical institutes. The five-year program includes basic sciences, pre-clinical and clinical study, with practical training for two months after the fourth semester and for one month during the fifth. Both theoretical and practical examinations are taken upon completion of each subject. All tests are oral.

Examinations. On completion of the entire program, state examinations under the authority of the State Examination Commission are taken in the following subjects: History of the Communist Party of the USSR (now being replaced by an examination in philosophy), internal diseases, therapeutic stomatology, surgical stomatology, and orthopedic stomatology.

Award. The award of the diploma, physician with specialization in stomatology *(vrach po special'nosti stomatologii)*, entitles the holder to practice.

Medicine

Ten out of approximately 90 medical institutes are under the authority of the Ministry of Health, while the remainder are operated by the ministries of health of the republics. As with other university-level and professional programs, the whole structure of medical education in the Soviet republics is in flux. "Economic models," with the possibility of sponsorship of students by organizations for which they will eventually work, are being discussed.

The curricula of all medical institutes are governed by the regulations of the Ministry of Health in conjunction with the State Committee for Public Education in terms of syllabi and examinations. The Ministry of Health of each republic decides how many first-year students are to be admitted. Entrance examination grades are important; however, preference is given to those applicants who have had practical experience in the health professions since leaving secondary school. As in other institutions of higher education, each medical institute is headed by a rector.

Admission. Admission is based on a completed general secondary education and the successful passing of an entrance examination in Russian language and literature (or native language in some republics), physics, chemistry, and biology. Students who have completed a medical *uchilishche* are also eligible to sit for the entrance examination. Approximately 5% of the top graduates from feldsher programs sit for entrance examinations. Others may apply, after two years of employment as feldshers, to pursue evening study at higher medical institutes. Following three years of service, they may apply for admission as fulltime medical students. Thus, approximately 25% of feldshers enter the six-year medical programs.

Program. Medical study in the Soviet republics lasts six years and covers the basic, pre-clinical and clinical sciences. Table 7.1 gives the six-year program for medicine. Practical training, usually begun in the third year of the program, takes place after courses in microbiology, introduction to internal diseases, and general surgery have been completed. Practical training includes nursing practice in special medicine, special surgery, and general hygiene. Fourth- and fifth-year students complete their practical training after finishing departmental study in special medicine and surgery, obstetrics, work in polyclinics, and the first part of a course in the organization of public health. The sixth-year medical student concentrates in the basic specialty and works in clinics, polyclinics, sanitary and epidemiological stations, and pharmaceutical establishments.

There are four basic types of physicians in the Soviet republics. The therapist (primary-care physician), the hygienist (sanitarian-epidemiologist-hygienist), the pediatrician (children's primary-care physician), and the stomatologist (close to the U.S. dentist, with more emphasis on diseases of the oral cavity and less on teeth). A choice of career must be made very early since the training for each is quite different.

Following at least three years of service, a therapist may specialize in endocrinology, general surgery or otolaryngology; the pediatrician may become a children's rheumatologist or surgeon. Graduates of medical institutes with high grades may specialize immediately without the required service. Physicians are required to enroll for refresher courses in their respective fields of specialization every five years.

Calendar. The academic year is divided into two semesters, running from September to January and from February to June. Attendance is compulsory with 36 hours per week, of which 12 hours are devoted to lectures and 24 hours to practical work.

Examinations. There are two examinations for each subject: the first is held at the end of the first semester, the second at the conclusion of the academic year. All subjects studied during the semester are examined. End-of-semester examinations are graded with a "credit" *(zachet)*, whereas end-of-the year examinations receive a grade of "excellent" *(otlichno)*, "good" *(chorosho)*, or "satisfactory" *(udovletvoritel' no)*.

Final diploma examinations (both written and oral), administered by authority of the State Examination Commission, are given in two parts. The first part may be taken in the fifth year of the program, the second on completion of the sixth year. Topics covered on these examinations are scientific Communism, hygiene, and social hygiene. In addition, each field of specialization designates examinations in its specific area of concentration.

Awards. Students who have successfully completed the State examinations are awarded the title of physician *(vrach)*. A one-year specialized internship follows at an assigned location. Possession of the *vrach* confers the right to practice medicine in any part of the Soviet Union.

Postgraduate and refresher courses are available at medical institutes. The candidate of medical sciences degree and the doctor of medical sciences may be pursued in accordance with regulations pertaining to the *kandidat nauk* and *doktor nauk* degrees.

Paramedical Education

Middle-level medical personnel in the Soviet republics play a vital role in the delivery of medical services. As with medicine and dentistry, the ministries of health at each republic level, in cooperation with the State Committee for Public Education, define all parameters for the training of medical workers. Curricula are uniform through the republics. Every five years a program review is undertaken to update programs.

The academic year is divided into two terms and runs from September 1 to July 5, with a two-week winter and an eight-week summer recess. A student enrolls for a 36-hour week with six-hour classes per day.

Auxiliaries. The medical auxiliaries work under the supervision of the feldsher, much as an assistant nurse works under the supervision of a nurse. Students with an incomplete (grade VIII) secondary general education complete a specialized training program of one or more years at a specialized *uchilishche*. They undergo in-service training on the job. With experience and completion of specialized programs, an auxiliary may qualify to train as a feldsher.

Table 7.1. Six-Year Model Program in Medicine, Moscow Medical Academy

Specialization No. 1901

Subject	Lecture	Lab/Practice/ Seminar	Total
History of the Communist Party of the USSR	60	60	120
Marxist-Leninist Philosophy	80	60	140
Principles of Scientific Atheism	18	6	24
Political Economy	50	50	100
Scientific Communism	40	40	80
Special Training	68	186	254
Civil Defense	20	30	50
Physical Education, including Medical Gymnastics & Medical Control	11	174	190
Latin & Medical Terminology	-	72	72
Foreign Language	-	350	350
Medical Biology & Genetics	28	120	148
Medical & Biological Physics, with Information Science & Medical Equipment	36	132	168
General & Bio-Organic Chemistry	48	140	188
Biochemistry	46	144	190
Human Anatomy	54	222	276
Histology, Embryology & Cytology	34	134	168
Normal Physiology	50	186	236
Microbiology, with Virology & Immunology	38	146	184
Pharmacology	36	130	166
Clinical Pharmacology	4	52	56
Pathological Anatomy, with Dissection	38	148	186
Pathological Physiology	38	128	166
General Hygiene, with Ecology	36	94	130
Social Hygiene & Organization of Health Services	56	96	152
General Patient Care (Therapy)	-	40	40
Introduction to Internal Diseases	36	168	204
Internal Disease & General Physical Therapy	76	256	332
Endocrinology	18	38	56
Tuberculosis	18	78	96
Polyclinic Training	18	52	70
Occupational Diseases	8	30	38
Roentgenology & Radiation Medicine	18	58	76
General Patient Care (Surgery)	-	32	32
General Surgery & Anesthesiology	46	120	166
Reanimation & Intensive Therapy	4	34	38
Operative Surgery & Topographical Anatomy	18	112	130
Surgical Diseases	70	210	280

Subject	Lecture	Lab/Practice/ Seminar	Total
Urology	8	30	38
Stomatology	8	30	38
Traumatology & Orthopedics	40	94	134
Oncology	12	50	62
Infectious Diseases & Epidemiology	42	120	162
Dermatology & Venereal Diseases	26	70	96
Neurology, Neurosurgery & Medical Genetics	38	112	150
Psychiatry	26	66	92
General & Medical Psychology	4	32	36
Otorhinolaryngology	18	56	74
Pulmonology	18	56	74
Forensic Medicine	16	70	86
Soviet Law	30	18	48
Obstetrics & Gynecology	50	182	232
Pediatrics	36	130	166
Pediatric Surgery	8	58	66
Specialization:			
Internal Diseases	70	1,106	1,176
Surgical Diseases	70	1,106	1,176
Obstetrics & Gynecology	70	1,106	1,176

State Examinations:

Second Year:

- Human Anatomy
- Normal Physiology
- Histology
- Biochemistry

Fifth Year:

- Internal Diseases
- Surgical Diseases
- Obstetrics & Gynecology

Sixth Year:

- Specialization
- Marxism-Leninism
- Social Hygiene & Organization of Health Services

Feldsher. The word feldsher derives from the German *Feldscherer* (field barber who frequently performed field surgery). Such medical workers were introduced into Russia by Peter the Great in the seventeenth century. Due to the lack of trained physicians, the feldsher played a major role in the health care of the military. Upon retirement from military duties, the feldsher continued to practice as a civilian, particularly in the countryside where medical attention to the peasantry was sparse. The feldsher learned his trade on the job as a physician's assistant. In 1864 five poorly equipped two-year schools were opened for the training of the feldshers and, by the end of World War I, there were approximately two feldshers to one trained physician. Under the Bolshevik regime the training of feldshers expanded and is presently conducted at the medical *uchilishcha.*

The profession includes ordinary or general feldshers, feldsher-sanitarians, feldsher-midwives, and feldsher-laboratory technicians. The image is that of a sub-doctor who is supervised by a regular physician. In fact, the feldsher is a middle-level health worker. A comparison may be drawn between a feldsher and a U.S. public health nurse working in the rural areas; the difference is that the feldsher also performs minor surgery and obstetrics.

For the most part the feldsher practices independently of the physician in rural areas and at feldsher-midwife stations *(zdravpunkty).* Ordinary feldshers are trained to give emergency treatment and first aid and to make preliminary diagnosis of an illness until the arrival of a trained physician. House calls and patient consultation are also part of their responsibilities.

In urban areas, the feldsher works as a physician's assistant, directly under the supervision of a physician, much like a nurse in a U.S. outpatient department. The feldsher's responsibilities are technical ones which include house calls, as required. The feldsher's role in first aid *(skoraia pomoshch)* delivery is striking in that the feldsher is part of the crew in every ambulance. Feldshers are specially trained in coronary care, stroke and shock treatment and for children's care ambulances.

Program. Feldshers are trained at specialized secondary schools, the *uchilishchae.* Admission may be based on an incomplete secondary education (grades VIII-IX) or on the completion of secondary education (grades X-XI). The choice of which track to pursue, i.e., general feldsher, midwife, sanitarian, pharmacist, or laboratory technician must be made at the beginning of the program.

The curriculum requirements are laid down by the Ministry of Health in conjunction with the State Committee for Public Education. A high percentage of time is devoted to theoretical (68%) rather than practical work (approximately four hours of theoretical to each hour of practical training). The intent is to offer a broad range of medical subjects rather than a narrow specialization. See Table 7.2 for the sanitary-feldsher program.

The medical *uchilishcha* faculty is comprised of physicians and trained teachers who teach general education subjects. The quality of training is said to be uneven even though a uniform curriculum exists.

Students entering with a completed 10-to-11-year general education finish a two-and-one-half year curriculum; those entering with an eight or ninth grade general education must complete a three-and-one-half year program to supplement their secondary education while training for the feldsher. Part-time evening students can complete the feldsher program in four years of evening study, but the one-year clinical phase of the program must be done on a fulltime basis. At the conclusion to the training, a student is required to pass state examinations under the aegis of the State Qualifying Commission to be certified as a feldsher.

Training is free and many students receive stipends during the course of their study. Students who fail a subject may repeat the examination once. However, attrition for unsatisfactory performance is only about 2% to 3%. Every three to five years, a feldsher is required to take refresher courses.

Nursing

The duties of general nurses *(med sestra)* vary according to the clinical programs where they work. In addition, they perform much of the work ascribed to occupational therapists, rehabilitation therapists, and social workers in the United States. Trained nurses work approximately 36 hours per week. Nurses in the Soviet system of education are trained in medical secondary schools *(medizinskii uchilishcha)* by physicians and trained teachers who teach general education subjects. The length of training is two years and 10 months for those who enter with an incomplete general secondary education (grades VIII-IX) and one year and 10 months for students with the completed general secondary education (grades X-XI).

Table 7.2. One Year-Ten-Month Model Sanitary Feldsher Program, Medical *Uchilishche,* Moscow

Specialization No. 0403

Subject	**Lecture**	**Lab/Practice/ Seminar**	**Total**
Principles of Marxism-Leninism	200		200
Latin, with Principles of Medical Terminology	10	28	38
Anatomy & Physiology, with Principles of Pathology	100	52	152
Principles of Soviet Law	40	20	60
Microbiology	68	88	156
Analytical Chemistry, with Laboratory Techniques	12	102	114
Community Hygiene, with Principles of Sanitation	130	172	302
Labor Hygiene	60	130	190
Food Hygiene	78	108	186
Children's & Adolescent Hygiene	44	76	120
Social Hygiene & Organization of Health Services	42	52	94
Epidemiology, with Medical Parasitology	120	178	298
Disinfection	32	72	104
Infectious Diseases, with Principles of Dermatology & Venereal Diseases	80	130	210
Clinical Pathology	82	120	202
First Aid	30	62	92
Psychology, Professional Ethics & Deontology	56		56
Basic Medical-Military Training	30	50	80
Physical Education		296	296
Specialization		190	190
Practical Training			22 weeks
Diploma Project			2 1/2 months

State Examinations:

Marxism-Leninism

Admission. All applicants to nursing programs are required to sit for an entrance examination. Students with an incomplete general secondary education must pass examinations in Russian and mathematics; those with completed general secondary schooling sit for Russian language and literature, and chemistry.

Program. The two-year-10-month curriculum is divided into three parts: general education courses, general medical courses, and special nursing courses. Approximately 105 hours comprise the general education area and include philosophy and scientific atheism. About 391 hours of lectures and 119 hours of practical training constitute the general medical component, and approximately 566 hours of lectures and 757 hours of practical training are required in the special nursing category. (See Table 7.3 for the nursing program.)

On completion of the fifth semester, students sit for a state examination under the auspices of the State Qualifying Commission. During the sixth semester, they specialize in their field of concentration. A required eight-week training period may be undertaken at a hospital, clinic, or other health facility. Another state examination is administered at the end of the sixth and final semester when the qualification of nurse is granted by authority of the State Qualifying Commission.

Nursing graduates with outstanding grades (a grade of 5) are eligible to apply for further education at higher medical institutes in programs leading toward a medical degree *(vrach)*. Those whose grades are lower than 5 are required to practice for at least three years before they can sit for an entrance examination.

Further professional development training is available in the form of short-term refresher programs at places of work, medical secondary schools, or medical institutes.

Physical Therapy

The Soviet system of education does not provide for independent programs in physical therapy. Training in physical therapy may be offered through short-term programs (approximately four months) at medical *uchilishcha* or at institute levels. Institute-level physical therapy courses are more likely to be incorporated within the curricula of Institutes of Physical Education and Culture.

Table 7.3. One Year Ten-Month Model Nursing Program, Medical *Uchilishche*, Moscow

Specialization No. 0408

Subject	**Lecture**	**Lab/Practice/ Seminar**	**Total**
Principles of Philosophy	116		116
Soviet Law	30		30
Latin	40		40
Normal & Pathological Anatomy & Physiology	100	60	160
Principles of Pharmacy	90	30	120
Hygiene	40	10	50
Hospital Nursing	46	262	308
Theory of Nursing	60	158	218
Surgery, with Principles of Reanimation	60	158	218
Pediatrics	60	158	218
Midwifery with Gynecology	20	64	84
Infectious Diseases, with Microbiology & Principles of Epidemiology	30	60	90
Neural & Psychiatric Diseases, with Principles of Psychology	18	52	70
Dermatology & Venereal Diseases	10	40	50
Physical Education		240	240
Specialization	32	248	280
Hospital Practice		approximately 18 weeks	

State Examination:

Philosophy
Specialization

VIII. TEACHER TRAINING

The Professional Status of Teachers

The Russian language has three related words for teacher: pedagogue *(pedagog)*, teacher *(uchitel')*, and instructor *(vospitatel')*. All three define the professional teacher in the Soviet system as well as the teacher's role and status.

By virtue of their training, teachers in the Soviet republics belong to the intelligentsia. The status of the Soviet teacher owes much to the educational ideas initiated by Lenin, Krupskaya, Lunacharsky, Makarenko, and others, inasmuch as the teacher plays a vital role in the intellectual, moral, social, and political upbringing of children. Soviet culture, which is imparted through schools, has its foundation in Marxist-Leninist principles. Hence, teachers' ideological roles in society are perhaps higher than their counterparts in Western countries. This holds true even though the Soviet teacher has no power in the selection of textbooks, teaching methods, curriculum planning, or assessment. The entire process is determined by the State.

With the advent of *perestroika*, this is changing. Teachers have been encouraged to voice their observations in professional journals and periodicals. Outstanding teachers are honored and recognized through the award of meritorious medals. Upward mobility in the profession is possible through participation in professional activities. In 1965 the Soviet teacher was honored with a public holiday *(den uchitelia)*, which is celebrated each year on the first Sunday of October.

The Soviet teacher's status as a professional is further secured by a uniform salary scale, acceptable conditions of employment, and guaranteed employment for life. Rural and outlying areas of the Soviet republics, however, experience a chronic shortage of teachers despite allocated benefits such as rent-free accommodations, free utilities, and even garden plots. A 20% pay incentive is offered for teaching posts in Siberia. The practice of job assignment after graduation will continue in the teaching profession. At the republic level, it has been proposed that those who refuse to teach in their assigned area must repay the entire cost of their four-to five-year programs to the State.

Since 1975 a procedure for teacher accreditation has been added to the normal promotion mechanisms. Through a rigorous written and oral examination administered by a local educational attestation commission (attestatsionnaia komissiia), a practicing teacher may compete for the title of teacher methodologist *(uchitel' metodist)* and senior teacher *(starshy uchitel')*. Such titles carry with them influence and prestige in the profession. A new honorary title, people's teacher *(narodny uchitel')*, conveys nationwide honor upon a teacher.

Teacher Training Institutions

All teacher training institutions are administered by the republic's State Committee for Public Education. The Committee controls all aspects of teacher education and prescribes curriculum requirements, textbooks, and examinations. Thus, teacher training programs are all uniform throughout the Soviet system.

Training is conducted at pedagogical institutions *(pedagogicheskie uchilishcha)*, pedagogical technicums *(pedagogicheskie techniky)*, pedagogical institutes *(pedagogicheskie instituty)*, and universities. Many continuing education institutes for teachers *(instituty usovershenstvovaniia uchitelei)* and autonomous curriculum centers *(metodicheskie kabinety)* also exist for the professional advancement and in-service training of teachers through special lectures, seminars, and a variety of other programs. At such centers, teachers update their skills, discuss existing problems in education, and prepare for new curricula and programs. It is to be noted, however, that the quality of such training centers differs widely.

Teacher training in the Soviet republics is excessively academic and not necessarily school-oriented. Emphasis in learning continues to be based on facts and comprehension rather than on application and evaluation. Experimental approaches are only now beginning to be recognized as valid methods of training. A new "pedagogy of cooperation" is evolving which opens up teacher training curricula to experimentation, innovation and participation, and alternative problem-based methods of thinking.

Pedagogical Schools

The pedagogical schools *(pedagogicheskie uchilishcha)* train kindergarten and primary school teachers. Applicants with a completed 10-year secondary education enroll for a two-year program. Applicants with nine (eight prior to 1986) years of schooling are trained for three-and-one-half years, if they are preparing for kindergarten teaching, and four years if they want to teach at primary schools, which includes additional subjects in their field of concentration.

The curriculum incorporates general education courses and education subjects together with practice teaching. Observation and practice teaching is an important part of the curriculum. At the end of the program and final examinations, students are granted a diploma issued by authority of the State Qualifying Commission under the authority of the State Committee for Public Education. Table 8.1 presents the preschool and kindergarten teacher training program.

Some *uchilishcha* track their graduates for at least three years to determine the effectiveness of their teaching methods. Results of such follow-ups enable the pedagogical council within the *uchilishche* to detect flaws in the curriculum and amend programs as necessary.

Pedagogical *Tekhnikums*

Similar to the pedagogical schools (see above), in terms of admissions criteria and length of programs, pedagogical technicums *(pedagogicheskie tekhniky)* train teachers for practical skills in labor, vocational and arts subjects at the lower secondary levels.

Pedagogical Institutes

Admission to all pedagogical institutes *(pedagogicheskie instituty)* is based on a completed secondary school education and a competitive entrance examination, together with character references and an interview. Pedagogical institutes train the majority of teachers in the Soviet republics. Study may be undertaken fulltime, part-time, or by correspondence. The latter type of training covers the same course content as the fulltime programs; however, the period of study lasts two years longer. The institutes prepare teachers for all grades. Five-year programs prepare teachers for all subjects in grades V to X. Those preparing for preschool teaching and the first four grades enroll in four-year curricula. Institutes of Physical Education and Culture offer four-year teacher training programs with at least two months of practice teaching. Reforms, presently being discussed, envision a gradual move toward five-year programs of fulltime study in all curricula, with five to six weeks of practice teaching and classroom observation per year. Philosophy (formerly History of the Communist Party of the USSR) and tests in the field of specialization will be the only required State examinations for graduation. Students who obtain a grade of "excellent" in the philosophy course will not be required to retake the subject on the State examination.

Study of the subject to be taught occupies a central part of the program, although it is less concentrated at the institute than at the university level. Education-related courses include general psychology, educational theory and methodology, history of education, and school hygiene. Theoretical materials are presented in lecture format and supplemental readings are required of students. Seminars involve presentation and discussion of reports and papers. During the last two years of the program, practice teaching is important and work at a summer Pioneer camp (youth camp) is also mandated. Table 8.2 presents the program for the physical education and sports teacher.

To receive a diploma, students are required to pass an internal institute examination and four subjects on the state examinations, one in philosophy (formerly the History of the Communist Party of the USSR) and the other three related to the field of concentration. The diploma is granted by authority of the State Examination Commission.

Pedagogical institutes also offer graduate training leading toward the candidate of pedagogical sciences *(kandidat pedagogicheskikh nauk)*, a program which lasts three years on a fulltime basis, four years part-time.

Universities

By comparison with students at pedagogical institutes, university students receive narrower, more specialized training in a specific subject area. Education-related subjects are given less importance. Courses in psychology and educational theory are abbreviated, school hygiene is not taught, and practice teaching is of shorter duration. Since interest in teacher training is increasing due to the greater prestige of university-trained personnel in the professions, some universities have established teacher training departments. Table 8.3 presents the program for the Russian language and literature teacher.

Institutes for Improvement of Teachers' Qualifications

Special institutes exist across the Soviet republics to improve and upgrade teachers' qualifications. The network of such institutes for improvement of teachers' qualifications *(Instituty dlia povyshenia qualifikatsii)* extends from a central institute in Moscow and 15 republics to approximately 188 regional centers. Teachers are asked to attend refresher courses every four or five years to keep abreast with new developments in their field. Faculty from universities and pedagogical institutes usually teach these courses.

Pedagogical Readings

Pedagogical Readings *(Pedagogicheskie chteniia)* are, in a sense, educational societies for professional development. They are organized with the help of pedagogical institutes, institutes for the improvement of teachers' qualifications, and the Academy of Pedagogical Sciences to bring practicing teachers together at conferences on the national, republic and district or city levels to hear papers read on topics of education. Prestige is gained when teachers are chosen to present a paper and when the paper is selected for publication.

Reforms in Teacher Training

Teacher training in the Soviet republics is undergoing re-examination at all levels of education under *perestroika.* Wide ranging reforms have been drawn up by the Russian Federation and other republics. Western classroom methods, teacher training styles, and quality control are all part of the proposed reforms to be introduced in universities before they are instituted at pedagogical institutes and pedagogical schools.

A "pedagogy of cooperation" is evolving which includes input from teachers, students, and administrators. The new plan calls for the introduction of more psychology and more pedagogy as well as sociology, anthropology, and "culturology" to give teachers a better educational foundation. Practice teaching will also be increased to one year. A move away from standardization is also contemplated. How this is to be accomplished has not yet been formalized; however, one focus of reform is a more concentrated effort at regionalization in respect to language. Russian is quickly becoming a second language in most republics.

Table 8.1. Three-Year-and-Ten-Month Model Preschool and Kindergarten Teaching Program, Pedagogical *Uchilishche,* Moscow

Specialization No. 0308

Subject	Lecture	Lab/Practice/ Seminar	Total
History	194		194
Principles of Marxism-Leninism	208		208
Russian Language & literature	388		388
Ethnic Language	196		196
History of World & Native Culture	81		81
Principles of Soviet Law	45	18	63
Mathematics	156		156
Physics, including Astronomy	58	20	78
Chemistry, including General Biology	116	40	156
Principles of Computer Science	19	40	59
Foreign Language	78		78
Anatomy, Physiology & Hygiene of Preschool Age	97	20	117
Principles of Medical Science	96	20	116
Preschool Age Psychology	126	20	146
Preschool Pedagogy	253	30	283
Mother Language with Language Development	299	27	[illegible]
Children's Literature with Reading Practice	139	54	[illegible]
Principles of Education	38		38
Methods of Teaching Natural Science with Ecology	90	63	153
Methods in Physical Education	39	88	127
Methods in Elementary Mathematics	71	15	86
Methods in Drawing & Sculpture	208	104	312
Methods in Music Education	130	54	184
Rhythm & Choreography		52	52
Technical Aids		34	34
Workshops		116	116
Methods in Observation Techniques		18	18
Work Safety	36		36
Physical Education		522	522
Basic Military Training	39		39
Practice Teaching		449	499
Subjects in Specialization	322		322
Regional Study	39		39

State Examination: Principles of Marxism-Leninism
Pedagogy with Methodology

Table 8.2. Four-Year Model Physical Education & Sports Program, Kiev Institute of Physical Education

Specialization No. 1906

Subject	Lecture	Lab/Practice/ Seminar	Total
History of the Communist Party of the USSR	56	64	120
Marxist-Leninist Philosophy	68	72	140
Political Economy	42	58	100
Scientific Communism	34	46	80
Principles of Scientific Atheism	16	4	24
Principles of Marxist-Leninist Ethics & Aethetics	12	28	40
Anatomy	50	80	130
Human Physiology	48	72	120
Biochemistry	34	46	80
Hygiene in Physical Education	38	52	90
Sports Medicine	30	60	90
Sports Massage	10	70	80
Medical-Biological Principles of Physical Education & Sports	30	50	80
Soviet Law	16	20	36
Biomechanics	26	34	60
Pedagogy	34	46	80
Psychology	56	64	120
History of Physical Education & Sports	30	30	60
Introduction to Specialization & Principles of Independent Research	28	42	70
Sports Theory	40	50	90
Theory & Methodology in Physical Education	44	46	90
Sports Training	40	50	90
Sports Measurements	22	28	50
Computer Science	10	30	40
Foreign Language		210	210
Sports Equipment	10	20	30
Special Theory & Methodology	50	300	350
Specialization	116	394	404
Practical Training with Methods of Teaching	20	730	750

State Examinations:
Marxism-Leninism
General & Sports Physiology
Specialization

Table 8.3. Five-Year Model Russian Language and Literature Teacher Program, University and Pedagogical Institute

Specialization No. 0217

Subject	Lecture	Lab/Practice/ Seminar	Total
History of the Communist Party of the USSR	140	140	280
Marxist-Leninist Philosophy	116	116	232
Political Economy	116	116	232
Scientific Communism	68	68	136
Principles of Marxist-Leninist Ethics & Aesthetics	64	64	128
History of the USSR	50	50	100
Psychology	140	140	280
Pedagogy	262	262	524
Methods of Teaching Russian	120	120	240
Methods of Teaching Literature & Reading	150	150	300
Literary Language of the Teacher	100	100	200
General Linguistics	100	100	200
Contemporary Russian	510	510	1020
Old Slavonic	60	60	120
History of the Russian Language	140	140	280
Russian Dialectology	30	30	60
Linguistic Textual Analysis	30	30	60
Theory of Literature	100	100	200
Russian Verbal Folklore	50	50	100
History of Russian Literature & Literary Criticism	500	500	1000
Literature of the People of the USSR	30	30	60
Children's Literature	40	40	80
History of Foreign Literature	300	300	600
Native Cultures of the World	78	78	156
Instructional Technology	40	40	80
Latin	40	40	80
Foreign Language	196	196	392
Courses in Specialization	270	270	540
Physical Education		650	650
Medical Training		360	360
Practice Teaching			40 weeks

State Examinations:

Marxism-Leninism
Russian Language
Russian Literature
Pedagogy with Methods of Teaching Russian
Language & Literature

IX. OTHER FORMS OF EDUCATION

Adult Education

The far-flung adult education system in the Soviet republics allows the adult students to

- complete secondary school,
- train as skilled workers at evening vocational school or directly at their place of work,
- enroll in special secondary and higher education training on a part-time basis, or
- upgrade professional skills.

The most noteworthy development in Soviet adult education has been the significant growth of educational activities by nongovernmental, public, voluntary *(obshchestvennie)* organizations such as trade unions, Komsomol (Communist Youth League) groups, and cooperatives as well as voluntary professional organizations and sports societies.

The Znanie Society, with direction from party organs but independent of the State Committee for Public Education, maintains a nationwide system of lecture bureaus that propagate political and scientific information through short-term lectures and seminars. The Znanie Society devotes its attention to lectures in international politics and international economic relations.

Both the Znanie Society and People's Universities (see below) have a decentralized administrative structure; nongovernmental financing of activities; and use of unpaid, part-time instructional personnel. Financial support is provided by trade unions, local party cadres, or the Komsomol organization or any number of voluntary scientific-technical organizations.

Instructors are drawn to the profession through their desire for professional growth and inclination to teach. They also welcome the opportunity to do some research in their fields in preparation for the lectures. Only about 5% to 10% of lecturers are paid a small honorarium.

A Central Council of People's Universities in Moscow, working through republic, country *(oblast)*, city, and regional *(raion)* levels which all have nominal input into the planning of programs, exists. However, local needs determine what specific lectures are to be offered.

People's Universities are not true universities in the formal sense of degree-granting institutions. From a loose network of programs in urban centers in the early 1960s, the People's Universities became a nationwide system of adult education. People's Universities organize programs which may run from six months to four years. Programs are attended on an "auditing" basis. Nationwide, attendance runs into the millions. These universities are committed to broadening the political and cultural level of auditing participants, disseminating information on scientific achievements, and instilling the custom of self-education.

A certificate of completion *(diplom ob okonchanii)* or a certificate of attendance *(svidelstvo/udostoverenie)* is granted upon completion of a course or program of study.

Free University

In 1990 discussions were being held on the establishment of a Free University of Leningrad as part of the proposed University of the Peoples of Europe under the sponsorship of the Standing Conference of Rectors, Presidents, and Vice-Chancellors of the European Universities Conference. The University is expected to acquire legal status as an institution of higher education in 1993. It is hoped that programs in the humanities, mathematics, and physics will be offered in both English and Russian.

Open University

A privately financed, open university was inaugurated in the Russian republic in 1990. Institutional expenses are expected to be covered by fulfilling orders from factories and educational organizations for research and books. Courses are given by mail. However, the university plans to expand its offerings through the use of television and radio. Enrollment is free and students do not have to sit for entrance examinations but must have completed secondary education. Students may study as long as they wish. To complete the requirements for a first university degree *(diplom)*, students may have to study up to seven years.

Patrice Lumumba People's Friendship University

Founded in the 1960s and named after Patrice Lumumba, the left-wing Congolese leader, Patrice Lumumba University has an international student enrollment, principally from third world countries. Its stated purpose is to provide higher education to students from countries that have gained their independence from colonialism and to spread Soviet influence in the developing nations.

Admission is by recommendation made directly to Patrice Lumumba People's Friendship University in Moscow through Soviet friendship societies in their respective countries or through trade unions. Students may also apply through the Soviet embassy. Applicants must be secondary school graduates in their country. The university is empowered to admit those it deems qualified. A one-year orientation plus Russian language study program is required of all entering international students. Degree requirements in specific fields of concentration are structured on the general pattern of Soviet degrees at institutions of higher education. However, emphasis on social discipline and Marxist ideology remains dominant. All foreign students at the University are already enrolled in the new two-stage curriculum, i.e., bachelor's followed by a master's degree. There is no charge for tuition for third world country students. Tables 5.2 and 5.5 present programs for civil engineering and law.

Private and Religious Schools

In the wake of the October Revolution (1917), religious educational establishments were placed under the jurisdiction of the State.

Even though religious instruction, organized by churches and denominations, was illegal until the advent of *perestroika*, a few institutions for training clergy have survived. They derive financial support from donations. The Russian Orthodox Church maintains approximately 18 training centers for the clergy and about six seminaries and theological academies. The remaining programs belong to other Christian denominations as well as to Jews and Muslims. The demand for religious training is undergoing a revival, and many religious institutions offer programs by correspondence.

Moscow Theological Academy offers a four-year diploma program in Orthodox theology. The *diplom* is awarded by authority of the Moscow Patriarchate.

Military Education

Military institutions, like other specialized branches of education, encompass a vertical network of institutions. At the secondary level, two institutions, the Suvorov Military School and the Nakhimov Naval School (both called *uchilishche*), provide direct entry into military institutions of higher education. Admission to military *vuzy* is also offered to decorated military personnel, to upper secondary school graduates with a gold medal, or to specialized secondary (SSUZ) honors graduates. Graduates of the Moscow Military Music School *(uchilishche)* are offered admission into the Chaikhovskii Conservatory in Moscow in the bandmaster specialization.

Military educational institutions offer a variety of programs, ranging from short term "qualification improvement" courses to full *diplom* programs. The most common programs are five-year engineering degree programs and four-year "command" programs. Among the known military institutions of higher education are the following:

Air Force Engineering Academy (Zhukovskii Academy)

Chernigov Higher Military Aviation School for Pilots

Kaliningrad Higher Engineering School for Higher Troops

Kazan Higher Tank Command School (Tatar ASSR)

Military Communications Academy (Budennyi Academy)

Military Engineering Institute (Mozhaiskii Institute)
Samarkand Higher Military Motorized Vehicle Command School
Stavropol Higher Military Motorized Vehicle Command School
Sumy Higher Artillery Command School (Frunze Academy)
Tambov Higher Military Training School for Pilots
Ussuruiusk Higher Military Motorized Vehicle Command School

The General Staff Military Academy offers postgraduate education and admits career military graduates of military academies. It offers specialization in strategy and leadership development. Students follow a two-year program in theoretical study interspersed with practical exercises and maneuvers. A thesis and defense is required for graduation.

X. SUGGESTIONS FOR U.S. ADMISSIONS OFFICERS

Changes Since 1985

General

Perhaps the most significant change that occurred with the advent of *perestroika* was the loosening of restrictions controlling access to information and exchange. Scholars from abroad are now permitted access to nonsensitive archives. Statistical information is being made available by Soviet agencies to Western researchers and collaborative efforts are underway to identify problem areas.

A further significant change which occurred is the opening up of once closed areas of the Soviet republics to Western field work. No longer are Western scholars limited to visiting major cities in the Soviet republics; now they are invited to visit outlying areas. Even though an internal visa is still required to travel within the Soviet areas, it is routinely issued.

The 1987 Higher Education Act stressed, among others, the development of effective cooperative links with institutions in other countries. Therefore, Soviet educational institutions are increasingly seeking Western capital to finance new projects and programs. Consortia with Western institutions to offer degree programs are being established. With the increased interest of Western students in studying in the Soviet system of education, institutions are also willing to enter into partnerships with profit-seeking enterprises to help ease the workload of teachers with large classes.

Foreign students who are admitted to university-level institutions in the Soviet republics must bear in mind, however, that a one-year period of training in the Russian language and some basic subjects are required prior to assuming fulltime study in their prospective programs.

Changes in Educational Structure

Glasnost' (openness) does not necessarily facilitate *perestroika* (restructuring). Even though there is general agreement within the Soviet system that things must change, the restructuring of an old framework is another matter, education not excluded. The well publicized "Guidelines for Restructuring Higher and Secondary Specialized Education in the Soviet Union" (1984) is hard pressed to meet the target date of 1995. The slow progress is openly discussed in the Soviet press. It appears that the functional principles of the educational system remain untouched. The multi-level administrative structure is still very much in place. Only starting measures are being implemented, e.g., pay raises for teachers, a shift to 11 years of schooling (earlier school start), more hours devoted to instruction in labor skills, and partial review of curricula and textbooks.

Faculty members, many of whom are conservative and lack experience in assuming responsibility for academic affairs at their respective institutions, often stand in the way of necessary changes in education. Others indicate that they are at a loss as to what to do to achieve *perestroika.*

Reforms include a new reexamination of Communist ideology in curricular structure. However, this is hindered by a lack of faculty able to teach democratic concepts. Until such time as post-1985 graduates enter the teaching profession, old-guard faculty in the fields of philosophy, history, etc. may find it difficult to adjust their outlook to new trends.

Academic Credentials

While all diplomas granted by institutions in the Soviet republics are accorded formal equality, there will always be above average and only average students, depending on the quality and prestige of the institution attended. Establishing the comparability of credentials from one country with that of another depends not only on recognizing diplomas at a given level of education but also on comparing the duration and the scope of programs. Perhaps one of the basic requirements for making workable admissions decisions is an awareness of levels of education as well as categories of institutions.

The term "diploma" *(diplom)* in the Soviet system of education is used at any academic level. The term "certificate" *(svidetel'stvo)* is often used for short-term programs at any level of training.

1.A Maturity Certificate *(attestat zrelosti)* is issued by a secondary school. The certificate outlines the courses completed and the grades received. A gold or silver medal indicates an outstanding or honors student. Students who complete upper secondary education in a vocational program (SPTU) will receive a diploma of completion *(diplom ob okonchanii).*

2. Students who have completed a *tekhnikum, uchilishche*, or *kolledzh*, following 10 to 11 years of general education, can submit a record of studies for the final years of specialized study after grades X-XI. *Tekhnikum, uchilishche*, and *kolledzh* diplomas are awarded by authority of the State Qualifying Commission.

3. An academic certificate *(akademicheskaia spravka)* reflects courses taken and marks received for partial completion of postsecondary programs. It also includes the number of study hours for each subject, examination results, and credits *(zachety)* granted. *Zachety* indicate the completion of courses without examination. A *zachet* represents a passing grade on a Pass/Fail scale; however, the basis on which the grade is granted is variable, i.e., laboratory work, out-of-class assignments, or class participation. Failures are not recorded. Such certificates are issued by the institution over the signature of the rector or pro-rector and countersigned by the secretary/registrar. The registration number, date of issuance, and reason for withdrawing from the institution are stated.

4. The first university-level degree *(diplom)* is issued by authority of the State Examination Commission. With the current trend toward institutional autonomy, the role of the Committee may change. It is likely that the first university-level diploma will be issued directly by the institution instead of the State Examination Commission. A copy of the diploma *(diplom)* with accompanying addendum *(prilozhenie k diplomu)* or archival certificate *(arkhivnaia spravka)* can be presented.

The addendum to the diploma is not valid without the diploma *(vypiska iz zachetnoi vedomosti - bez diploma ne deistvitel'naia).* This companion to a specific diploma is a cumulative record of the student's performance. It indicates the institution attended, dates of attendance, field of specialization, list of courses completed, marks received, and state examinations passed. Failing grades are not recorded. Credits *(zachety)* indicate that course requirements were met without examinations. The signatures of the rector, dean and secretary/registrar are affixed. The addendum registration number must correspond to the diploma number.

In lieu of an addendum, an archival certificate *(arkhivnaia spravka)* is often provided to students who have graduated from a postsecondary institution. The certificate includes all the subjects completed, the credits and examination marks received, and the length of study hours for each course. As with all academic records, failing grades are not recorded and credits indicate that subjects were completed without examination. It is issued by the institutional archive (records office) over the signature of the rector or pro-rector together with the signature of the director of archives. This certificate is used in the absence of an "addendum to the diploma" for students who have graduated long ago.

5. The graduate degree of *kandidat nauk* (candidate of sciences) is awarded by authority of the Highest Attestation Commission (vysshaia attestatsionnaia komissia) in conjunction with the Council of the institution at which research for the degree is completed. The authority to award a *kandidat nauk* may be granted to institutions directly, but the *doktor nauk* (doctor of sciences) will continue to be awarded by the Highest Attestation Commission. A copy of the candidate of sciences degree with examination results for candidacy *(aspirantura)* together with a synopsis of the thesis is available to *kandidat nauk* holders.

A copy of the *doktor nauk* certificate together with a dissertation abstract *(referat)* and list of publications may be requested of *doktors.*

Translations

Dependence on "official" translations alone as confirmation of accuracy is not advisable as translators may misinterpret the original language document. Translations should always be accompanied by copies of original records from which such translations are made. It is recommended that documents under review be spot checked for accuracy and interpretation of terms.

Authenticity of Documents

It is not the policy of Soviet authorities to release original records from institutional archives. Students can only submit copies of original credentials. Facilities for photocopying are scarce; hence, copies are frequently typed by students and authenticated by institutional authorities or sealed by a notary. A credential notorized by a notary in the Soviet republics serves in lieu of an official document and is regarded as a legal paper under the law. Records to be presented for use in countries outside the Soviet republics are often required to have a stamp and the signature of the Ministry of Foreign Affairs.

Verification of documents may be obtained from the institution if the request is directed to the rector's office or the international relations department of the institution. It should be emphasized, however, that this process may take a great deal of time. No guarantee can be provided that a response will be forthcoming.

English Language Testing (TOEFL)

The TOEFL program is represented in the Soviet republics by the American Council of Teachers of Russian (ACTR) based in Washington (1619 Massachusetts Avenue, NW, Suite 527, Washington, DC 20036) with offices in Moscow (Leninski Pr., d. 2, k. 503, 117049 Moscow). The ACTR staff is facilitating the testing process. Through their efforts, the Test of English as a Foreign Language (TOEFL), the Graduate Records Examination (GRE), and the Graduate Management Admissions Test (GMAT) tests are being administered in the Soviet republics as follows:

1. The TOEFL is given in Moscow on a monthly basis. In Kiev, Leningrad, and Vilnius, the TOEFL is administered several times per year through 1992.

2. Arrangements have been made to offer the GRE in Kiev, Leningrad, and Moscow through 1992, while the GMAT will be given in Moscow only.

Appendix A. GRADING SYSTEM

The following grading system is used at all levels of education

otlichno/5	excellent
khorosho/4	good
udovletvoritel' no/3	satisfactory
neudovletvoritel' no/*plocho*/2	unsatisfactory
*zachet**	credit

*The award of a *zachet* has many variables. A *zachet* is granted for most laboratories (*kursovyi raboty)*, practica, outside assignments, or active participation in class. A course may be given an examination grade for the theoretical part of the subject and a *zachet* for the practical component. The number of courses which may be completed with a *zachet* within a curriculum is determined by the department. Usually, no more than five examinations are taken each semester, with the remainder of the courses receiving a *zachet*. A *zachet* is also assigned for a multi-semester course with a final, graded examination given at the completion of the course-sequence.

APPENDIX B. Specialties Offered at *Tekhnikumy* and *Uchilishcha* (SSUZ's)

NUMBER	SPECIALTY *(SPETSIAL'NOST')*
0100	**ECONOMICS AND PLANNING**
0101	Economics & planning
0102	Bookkeeping, control & analysis of economic activity
0103	Finance & credit
0104	Public budget
0105	Accounts in credit institutions
0106	Statistics
0107	Public insurance
0200	**LAW AND DOCUMENTATION**
0201	Science of law
0202	Law & management of social services
0203	Law upholding activities (public information)
0204	State inspectorate administration & legal work
0205	Criminology
0206	Case procedures & archival work
0300	**EDUCATION**
0301	Professional (vocational) instruction
0302	Labor education
0303	Physical culture
0304	Social rehabilitative work with the deaf
0305	Music education
0306	Teaching art & drawing
0307	Instruction in the beginning classes
0308	Preschool instruction
0309	Extracurricular/co-curricular educational work
0400	**HEALTH**
0401	Medicine
0402	Midwifery
0403	Hygiene, sanitation & epidemiology
0404	Stomatology
0405	Pharmacy
0406	Orthopedic stomatology
0407	Laboratory diagnostics
0408	Nursing
0409	Medical optics
0410	Artificial limb production
0500	**CULTURE AND ARTS**
0501	Piano
0502	String instruments
0503	Wind & percussion instruments
0504	Folk instruments
0505	Voice
0506	Choral directing
0507	Music theory
0508	Popular music
0509	Choreography
0510	Theater arts
0511	Musical comedy
0512	Circus arts
0513	Theater decorative arts
0514	Popular entertainment scene arts
0515	Portraiture
0516	Sculpture
0517	Artistic formation
0518	Restoration, conservation & protection of art works
0519	Decorative & applied art
0520	Librarianship
0521	Cultural-educational work & the organization of artistic activity
0600	**ECOLOGY AND PRESERVATION OF THE ENVIRONMENT**
0601	Environmental protection & the rational use of natural resources
0602	Industrial air quality
0603	Water supply & sewage systems & equipment

0700	**HYDROLOGY AND METEOROLOGY**
0701	Hydrology
0702	Meteorology
0703	Radiometeorology
0800	**GEOLOGY AND SITE DISCOVERY OF MINERALS**
0801	Geology, search & location of minerals
0802	Geophysical methods for the location of minerals
0803	Geophysical methods for studying wells
0804	Hydrogeology & engineering geology
0805	Geology & the location of oil & gas
0806	Technology & techniques of mineral discovery
0807	Test drilling for oil & gas
0900	**WORKING MINERAL SITES**
0901	Marksheider methods
0902	Technology of opening mineral locations
0903	Enrichment of mineral deposits
0904	Gas & oil production & conservation equipment
0905	Practical oil production & conservation
0906	Drilling gas & oil wells
0907	Operation of gas & oil wells
1000	**ENERGETICS**
1001	Equipment repair in electrical stations & substations
1002	Construction & repair of electrical transmission lines
1003	Repair & operation of hydroelectric stations
1004	Electrical supply
1005	Repair & operation of thermal energy electrical equipment & stations
1006	Water, heating & lubricating materials technology
1007	Operation of heating networks & equipment
1008	Hydromechanism technician
1009	Repair of steam-generating stations & nuclear energy
1010	Operation of steam-generating stations & nuclear energy plants
1100	**METALLURGY**
1101	Aglomeration production
1102	Blast furnace production
1103	Steel & ferrous alloy production
1104	Production of nonferrous metals & their alloys
1105	Reworking secondary nonferrous metals
1106	Foundry production of ferrous & nonferrous metals
1107	Science of metals & thermal working of metals
1108	Working metals by pressure
1109	Powder metallurgy
1200	**MACHINE BUILDING AND METALWORKING**
1201	Working materials on machines & production lines
1202	Production of numerical control & robotic machines
1203	Instrumental production
1204	Production of abrasive & diamond instruments
1205	Technology of welding production
1206	Heavy & transporting machine production
1207	Lifting-transport, construction & road machinery & equipment production
1208	Chemical, petroleum & refrigeration machine-building
1209	Machine-building for the textile, light, food production, & commercial industries
1300	**AVIATION TECHNOLOGY**
1301	Production of air ships
1302	Production of aviation engines
1303	Technical operation of airships & aviation engines
1400	**SHIPBUILDING**
1401	Hull construction
1402	Production of ship machinery & mechanisms
1403	Operation of ship energy installations

1404	Marine equipment technology
1405	Ship repair
1500	**AUTOMOBILES AND TRACTORS**
1501	Engine assembly
1502	Automobile assembly
1503	Tractor & agricultural machinery assembly
1504	Auto repair technology
1600	**ENERGY MACHINE BUILDING**
1601	Steam generator assembly
1602	Energy machine-building
1603	Cryogenic machines, equipment & installations
1700	**OPERATION, SERVICE, REPAIR OF MACHINES AND EQUIPMENT**
1701	Maintenance & repair of production equipment
1702	Maintenance & repair of refrigeration compressors
1703	Repair & operation of equipment for reworking secondary raw materials
1704	Operation & repair of lifting, construction & road equipment & machinery
1705	Operation & repair of food production equipment
1706	Operation & repair of equipment for preparation of construction materials
1707	Service & repair of machine-building equipment
1708	Service & repair of welding equipment
1709	Service & repair of geological search material
1710	Service & repair of gas & oil production equipment
1711	Service & repair of metallurgical equipment
1712	Service of equipment in chemical, gas & oil production
1713	Service & repair of railway rolling stock
1714	Service & repair of textile & light industry equipment
1715	Service & repair of equipment for trade & distribution
1716	Service & repair of printing machinery equipment
1717	Service of theater equipment
1718	Organization & techniques of firefighting
1800	**ELECTRICAL TECHNOLOGY**
1801	Production of electrical machines & apparati
1802	Production of automated electrical heating systems
1803	Production of electrical energy & information transmission equipment
1804	Maintenance & operation of electrical service to enterprises & public buildings
1805	Operation of airport electrical systems
1806	Stage lighting technology
1807	Operation & repair of electrical lines for urban electrical transportation systems
1808	Automotive & tractor electrical systems
1809	Production of marine electronics
1810	Electrical service & repair
1900	**INSTRUMENT AND APPARATUS CONSTRUCTION AND OPERATION**
1901	Production of time instruments
1902	Production of aviation instruments & avionics
1903	Production of hydraulic & pneumatic equipment
1904	Production of apparati for automating electrical communication
1905	Production of electrical lighting devices
1906	Service & repair of medical technology
1907	Operation of film & video equipment
1908	Technical operation of pilot-navigation equipment & avionics
1909	Geophysical apparatus & equipment
1910	Production of optical-electrical devices
1911	Gyroscope devices
2000	**ELECTRONIC TECHNOLOGY**
2001	Technology of materials of electronic technology
2002	Production of devices of electronic technology
2003	Production of electronic & electrical automation equipment
2004	Operation of equipment for the production of electronic technology

2100	**AUTOMATION**
2101	Automation of heat-energy processes in electrical stations
2102	Servicing numerically controlled & robotic machinery
2103	Operation of electromechanical equipment & automation of building construction
2104	Operation & repair of mining equipment & its automation
2105	Operation & automation of freight carrying equipment
2106	Operation of electrical equipment & energy systems
2107	Operation of electrical equipment & automation of ships
2108	Servicing airport automation & mechanization
2109	Automation of communication mechanisms
2110	Mechanization/automation of peat production
2200	**COMPUTER TECHNOLOGY**
2201	Production of computer technology
2202	Repair of automated systems
2203	Operation of automated systems
2204	Programming computers & automated systems
2205	Operation of computer systems
2206	Service & repair of computer technology
2207	Service & repair of automated railway control systems
2208	Dispatching systems & the technology of energy control
2300	**RADIOTECHNOLOGY AND COMMUNICATIONS**
2301	Radio apparatus assembly
2302	Operation of automated communication & signalling systems
2303	Electrical communications in transportation
2304	Operation of marine radiocommunication & navigation systems
2305	Automatic electrical communications
2306	Multichannel radio communications
2307	Radio communication, broadcasting & television
2308	Sound system technology
2309	Operation of aircraft radioelectronic equipment
2310	Ground flight control radioelectronics
2311	Service of common radioelectronic apparati
2312	Postal communications
2400	**TRANSPORTATION**
2401	Automobile traffic control
2402	Railway traffic control
2403	Waterway traffic control
2404	Aviation transportation management
2405	Air traffic control
2406	Aviation/Flying
2407	Airplane fuel & lubrication servicing
2408	Operation of inland water routes
2409	Naval piloting
2410	Piloting & naval fleet operation
2411	Piloting in inland waterways & coastal areas
2500	**CHEMICAL TECHNOLOGY**
2501	Organic chemical technology
2502	Inorganic chemical technology
2503	Electrochemical operations
2504	Chemical production of coal (coke)
2505	Oil & gas refining
2506	Polymer coatings & articles
2507	Photographic & magnetic films
2508	Silicate & high temperature nonmetallic materials
2509	Biochemical operations
2510	Refining secondary raw materials
2600	**WOOD PRODUCTS TECHNOLOGY**
2601	Wood storage & transportation
2602	Wood processing technology
2603	Chemical-mechanical technology of wood products & wood material
2700	**FOOD PRODUCTS TECHNOLOGY**

2701	Grain storage & processing
2702	Bakery, pasta & confectionery production
2703	Sugar products technology
2704	Winemaking
2705	Fruit & vegetable storage & processing
2706	Fat & fat substitutes
2707	Conserves
2708	Meat & fowl products
2709	Fish products
2710	Milk & milk products
2711	Tea & tobacco products

2800	**CONSUMER GOODS TECHNOLOGY**
2801	Primary processing of fibers
2802	Silk processing
2803	Spinning production
2804	Woven fabrics & hosiery
2805	Nonwoven fabrics & textiles
2806	Felt products
2807	Chemical technology of decorative production
2808	Design & display of consumer goods
2809	Coloring & design detail of light industry products
2810	Sewing
2811	Furs & leather technology
2812	Leather goods production
2813	Fur & sheepskin goods
2814	Musical instrument production
2815	Toys & games production
2816	Paper & cardboard goods production
2817	Technical editing of books & magazines
2818	Copy editing
2819	Manufacture of printing forms
2820	Printing production
2821	Printing & binding

2900	**ARCHITECTURE AND CONSTRUCTION TECHNOLOGY**
2901	Architecture
2902	Metal construction
2903	Construction & operation of buildings & structures
2904	Hydrotechnic construction
2905	Tunnel & subway construction
2906	Production of construction parts & reinforced concrete construction
2907	Operation of gas supply equipment & systems
2908	Sanitation & ventilation repair & service
2909	Railway construction
2910	Road & airport construction
2911	Construction of bridges & artistic structures
2912	Heat & atomic energy plant construction
2913	Construction of city utilities
2914	Railway service & repair

3000	**GEODESY AND CARTOGRAPHY**
3001	Applied geodesy
3002	Aerophotogrammetry
3003	Aerophotogeodesy
3004	Cartography
3005	Aerophotography

3100	**AGRICULTURE AND FORESTRY**
3101	Forestry
3102	Agronomy
3103	Horticulture
3104	Plant protection
3105	Silk farming
3106	Beekeeping
3107	Zootechnology
3108	Veterinary technology
3109	Land management
3110	Irrigation & flood control
3111	Mechanization of irrigation & flood control
3112	Green area construction & garden-park economics
3113	Agricultural mechanization
3114	Electrification & automation of agriculture
3115	Commercial fishing & aquaculture

3116	Fishery technology
3117	Hunting & game management
3200	**DISTRIBUTION, RETAIL AND CUSTOMER SERVICE**
3201	Trade & distribution of food products
3202	Trade & distribution of nonfood products
3203	Book trade
3204	Trade & distribution of household goods
3205	Food preparation & food service management
3206	Management of personal services
3207	Hotel & tourist complex service management
3208	Dry cleaning & dyeing
3209	Photographic services
3210	Hair styling & cosmetics
3300	**METROLOGY, STANDARDIZATION AND QUALITY CONTROL**
3301	Radiotechnical measurement
3302	Thermoelectrical technology measurement
3303	Mechanical measurement
3304	Standardization & product quality control
3305	Metal & welding quality control
3306	Analytical quality control of chemical bonds

Source: *Prilozhenie k prikazu Minvuza SSSR* ot 27.11.87, No. 810.

APPENDIX C. Specialties Offered at Institutions of Higher Education (VUZy)

NUMBER	SPECIALTY *(SPETSIAL'NOST')*
01	**NATURAL SCIENCES**
0101	Mathematics
0102	Applied mathematics
0103	Mechanics
0104	Physics
0105	Solid state physics
0106	Geophysics
0107	Astronomy
0108	Chemistry
0109	Biology
0110	Anthropology
0111	Zoology
0112	Botany
0113	Physiology
0114	Genetics
0115	Biochemistry
0116	Biophysics
0117	Microbiology
0118	Geography
0119	Meteorology
0120	Geohydrology
0121	Oceanology
0122	Hydrography
02	**HUMANITIES**
0201	Philosophy
0202	Scientific Communism
0203	Sociology
0204	Psychology
0206	History of the Communist Party
0207	History
0208	Historical archival science
0209	Documentation & governmental document preparation
0210	Systems of scientific-technical information
0211	Legal science
0212	International relations
0213	Oriental studies. African studies
0214	Journalism
0215	Publishing & editing
0216	Literary work
0217	Russian language & literature
0218	Russian language & literature in the nationality school
0219	Languages & literatures of the peoples of the USSR
0220	Foreign language (specifying language)
0221	Philology (specifying language)
0222	Applied linguistics
03	**INDUSTRIAL, PHYSICAL AND ARTISTIC STUDY AND TEACHING**
0301	Professional training & technical disciplines
0302	Labor
0303	Physical culture
0304	Beginning military training & physical culture
0305	Music
0306	Drawing & figurative arts
0307	Pedagogy & psychology
0308	Pedagogy & methods of early education
0309	Pedagogy & methods of educational work
0310	Defectology (special education)
04	**HEALTH SCIENCES**
0401	Medicine
0402	Pediatrics
0403	Hygiene, sanitation & epidemiology
0404	Dentistry
0405	Pharmacy
05	**CULTURE AND ART**
0501	Acting
0502	Directing
0503	Choreography

0504	Theater science
0505	Theater design-technical
0506	Instrumental artist
0507	Voice
0508	Conducting
0509	Composition
0510	Music
0511	Music arts in popular entertainment
0512	Sound engineer
0513	Cinematography
0514	Film direction
0515	Portraiture
0516	Graphics
0517	Sculpture
0518	Fine Arts
0519	Monumental-decorative art
0520	Decorative-applied art
0521	Design
0522	Interior design
0523	Artistic methods of propaganda & poster art
0524	Artistic planning of textile & household items
0525	Cultural work with public organizations & groups
0526	Library science
0527	Museum science & the preservation of historic & artistic artifacts

06 ECONOMICS

0601	Political economy
0602	Economics & management of production
0603	Economic & social planning
0604	Finance & credit
0605	Price formation
0606	Economics & sociology of labor
0607	Statistics
0608	Accounting, control & analysis
0609	Econometrics
0610	International economic relations
0611	Resource management & the optimization of exchange through production controls

07 ENGINEERING-ECONOMIC STUDIES

0701	Econmics & management in machine building
0702	Economics & management in metallurgy
0703	Economics & management in branches of energy industry
0704	Economics & management in the chemical-forest products industry
0705	Economics & management in the printing industry
0706	Economics & management in agrobusiness
0707	Economics & management in textiles & light industry
0708	Economics & management in construction
0709	Economics & management in trade & distribution
0710	Economics & management in communications
0711	Economics & management in transportation
0712	Economics & management in the social-cultural sphere
0713	Economics & management in scientific research & development
0714	Economics & management in mining & extraction
0715	Economic information systems & automation of management systems
0716	Production organization
0717	Economics & management in residential services & the urban economy

08 GEOLOGY AND EXTRACTION OF MINERAL RESOURCES

0801	Geological search & discovery
0802	Geophysical methods of search & discovery
0803	Geochemistry, mineralogy & petrology
0804	Hydrogeology & engineering geology
0805	Geology of oil & gas
0806	Technology & techniques of locating minerals

09 REFINING MINERAL RESOURCES

0901	Marksheider methods
0902	Subterranean preparation of mineral resource sites
0903	Enrichment of mineral deposits
0904	Mine & underground construction
0905	Open mining operations
0906	Physical processes of mining & oil & gas production
0907	Preparation & exploitation of oil & gas sites
0908	Planning, construction& use of oil & gas pipelines & storage facilities
0909	Drilling gas & oil wells
0910	Offshore oil & gas equipment

10 ENERGY

1001	Electrical stations
1002	Electro-energy systems & transmission lines
1003	Hydroelectric energy
1004	Distribution networks for electricity
1005	Fossil fuel electrical stations
1006	Water & steam technology in electrical stations
1007	Industrial fossil fuel energy
1008	Energetics of fossil fuel technology
1009	Thermophysics
1010	Nuclear electrical stations & installations

11 METALLURGY

1101	Metallurgy of ferrous metals
1102	Metallurgy of nonferrous metals
1103	Thermophysics, automation & ecology of warm agregates in metallurgy
1104	Physico-chemical studies in metallurgical processes
1105	Physics of metals
1106	Foundry production of ferrous & nonferrous metals
1107	Metals science, equipment & technology of heat working of metals
1108	Working metals by pressure
1109	Metallurgy & the processes of welding production
1110	Composite & powdered materials, coverings

12 MACHINE BUILDING AND METALWORKING

1201	Technology of machine building
1202	Metal-cutting machines & instruments
1203	Machines & technology of foundry production
1204	Machines & technology of pressure-working metals
1205	Equipment & technology of welding production
1206	Equipment & technology of improving durability & restoration of machine parts & apparati
1207	Machines & technology of high-efficiency processes of working metals
1208	Materials science & machine building
1209	Dynamics & durability of machines
1210	Hydro-aerodynamics
1211	Hydraulic machines, hydrodrives & hydropneumatic automation

13 AVIATION SCIENCE

1301	Airplane & helicopter construction
1302	Aviation engines & energy installations
1303	Technical uses of aviation apparati & motors

14 SHIPBUILDING

1401	Shipbuilding
1402	Planning & maintenance of shipboard energy installations
1403	Applications of shipboard energy systems
1404	Planning & production of shipboard energy equipment

15 AUTOMOBILES AND TRACTORS

1501	Internal combustion engines
1502	Automobile & tractor assembly
1503	Agricultural machine construction
1504	Hauling, construction & roadway machines & equipment
1505	Automobile economics

16 ENERGY-PRODUCING MACHINE BUILDING

1601	Boiler & reactor construction

1602	Turbine construction
1603	Low temperature physics & technology
17	**TECHNOLOGICAL MACHINES AND EQUIPMENT**
1701	Mining machines & equipment
1702	Machines & equipment in oil & gas industries
1703	Metallurgical machines & equipment
1704	Machines & equipment in forest products industries
1705	Machines & devices in chemical production
1706	Machines & devices in food processing
1707	Machines & devices in textile, light industry & household appliances
1708	Printing machinery & automation systems
1709	Locomotives
1710	Wagons
18	**ELECTRICAL TECHNOLOGY**
1801	Electromechanics
1802	Electrical devices
1803	Electro-isolation, cable & conductor technology
1804	High voltage technology & electrophysics
1805	Automated electrical installations & systems
1806	Lighting technology
1807	Electrical transport
1808	Automobile & tractor electronics
1809	Electrical equipment & automatic systems on ships
19	**INSTRUMENT FABRICATION**
1901	Instrument fabrication
1902	Physical methods & introscope instruments
1903	Aviation instruments & measuring-calculating systems
1904	Technical exploitation of aviation electrification & pilot-navigational systems
1905	Biotechnical & medical instruments & systems
1906	Metrology, standardization & quality control
1907	Information-measuring technology
20	**ELECTRONIC TECHNOLOGY**
2001	Physical electronics
2002	Physics & technology of materials & components of electronic technology
2003	Microelectronics & high conductivity apparati
2004	Electronic instruments & installations
2005	Industrial electronics
21	**AUTOMATION AND MANAGEMENT**
2101	Automation & management in technical systems
2102	Automatics, telemechanics & communications in railway transportation
2103	Automation of technology processes of production
2104	Automatic management of electrical energy systems
2105	Electrical delivery & automation of industrial installations & technological industries
2106	Robotics
22	**COMPUTER TECHNOLOGY AND SYSTEMS**
2201	Computers, complexes, systems & networks
2202	Automated systems of information & management
2203	Automated planning systems
2204	Programming & automated systems
2205	Computer & system design
23	**RADIOTECHNOLOGY AND COMMUNICATIONS**
2301	Radiotechnics
2302	Radio physics & electronics
2303	Design & technology of radioelectronic systems
2304	Implementation of radio equipment for transportation
2305	Automatic electro-communications
2306	Multi-channel electro-communications
2307	Radio communications, radio & television
24	**TRANSPORTATION**
2401	Freight & transportation management

2402	Ship piloting
2403	Air transportation
2404	Traffic control
2405	Mechanization of freight operations
25	**CHEMICAL TECHNOLOGY**
2501	Organic chemical technology
2502	Inorganic chemical technology
2503	Electrochemical production technology
2504	Chemical technology of fuel & carbon materials
2505	Chemical technology of high molecular bonding
2506	Technology of refining plastics & elastomers
2507	Chemical technology of photographic films & magnetic media
2508	Chemical technology of high temperature nonmetallic & silicate materials
2509	Biotechnology
2510	Nuclear chemistry technology
2511	Chemical technology of materials & products of electronic technology
2512	Fundamental processes of chemical production & chemical cybernetics
2513	Preservation of the environment & rational use of natural resources
26	**FORESTRY AND WOOD SCIENCES**
2601	Forestry engineering
2602	Wood products technology
2603	Chemo-mechanical technology of wood & wood materials
27	**FOOD PROCESSING TECHNOLOGY**
2701	Storage & preparation of grain
2702	Bread, confectionery, and macaroni goods & concentrates
2703	Sugar products
2704	Fermentation & winemaking
2705	Subtropic cultures
2706	Fat products technology
2707	Conserves
2708	Meat & meat products
2709	Fish products
2710	Milk & dairy products
2711	Food service technology
2712	Fruits & vegetables
28	**CONSUMER GOODS TECHNOLOGY**
2801	Technology & equipment of natural fiber production
2802	Weaving natural & man-made fibers
2803	Chemical technology & equipment of textile production
2804	Technology of knits & hosiery
2805	Technology of nonknitted textile materials
2806	Sewing design & technology
2807	Fur and leather technology
2808	Technology & design of leather goods
2809	Technology of printing production
2810	Retail in nonproduce goods
2811	Bookselling
29	**CONSTRUCTION AND ARCHITECTURE**
2901	Architecture
2902	Artistic design of urban, rural & park architectural ensembles
2903	Industrial & residential construction
2904	Hydrotechnical construction
2905	Communal construction and economics
2906	Production of construction goods & construction
2907	Heating oil and ventilation
2908	Water supply & sewage, rational use of water resources
2909	Railway contruction & economics of routes
2910	Road & airport construction
2911	Bridge & tunnel construction
2912	Construction of fuel & atomic power plants
30	**GEODESY AND CARTOGRAPHY**
3001	Applied geodesy
3002	Astronomogeodesy
3003	Aerophotogeodesy
3004	Cartography
31	**RURAL AND FOREST ECONOMICS**
3101	Agrochemistry & soil science

3102	Agronomy
3103	Fruitgrowing & vineyards
3104	Plant protection
3105	Silk farming
3106	Selection & genetics of farm cultures
3107	Zootechnology
3108	Veterinary science
3109	Land management
3110	Irrigation & drainage
3111	Mechanization of irrigation & drainage
3112	Forest, garden & park management
3113	Agricultural mechanization
3114	Electrification & automation of agriculture
3115	Commercial fishing
3116	Water bioresources & aquaculture

Source: *Spravochnik dlia postupaiushchikh v vysshie uchebnye zavedeniia SSSR v 1990 godu*, Moscow, 1990, pp. 110-34.

APPENDIX D. Sample Documents

Certificate of Secondary Education

This certificate is issued to......................, born in Chernovtsy City, Chernovtsy District, Urkainian SSR in 1968 and that in 1985 he completed the General Middles School No. 2 in Chernovtsy with exemplary conduct he acquired the following education:

Ukrainian Language	5 (excellent)
Ukrainian Literature	5 (excellent)
Russian Language	5 (excellent)
Russian Literature	5 (excellent)
Algebra & Priniciples of Analysis	5 (excellent)
Geometry	5 (excellent)
History of the USSR	5 (excellent)
World History	5 (excellent)
Social Studies	5 (excellent)
Physics	5 (excellent)
Astromony	5 (excellent)
Chemistry	5 (excellent)
Biology	5 (excellent)
Geography	5 (excellent)
Foreign Language (English)	5 (excellent)
Drafting	5 (excellent)
Vocational (Labor) Training	5 (excellent)
Physical Education	5 (excellent)
Basic Military Training	5 (excellent)

In addition, he completed studies in visual arts and music as well as a departmental course in physics

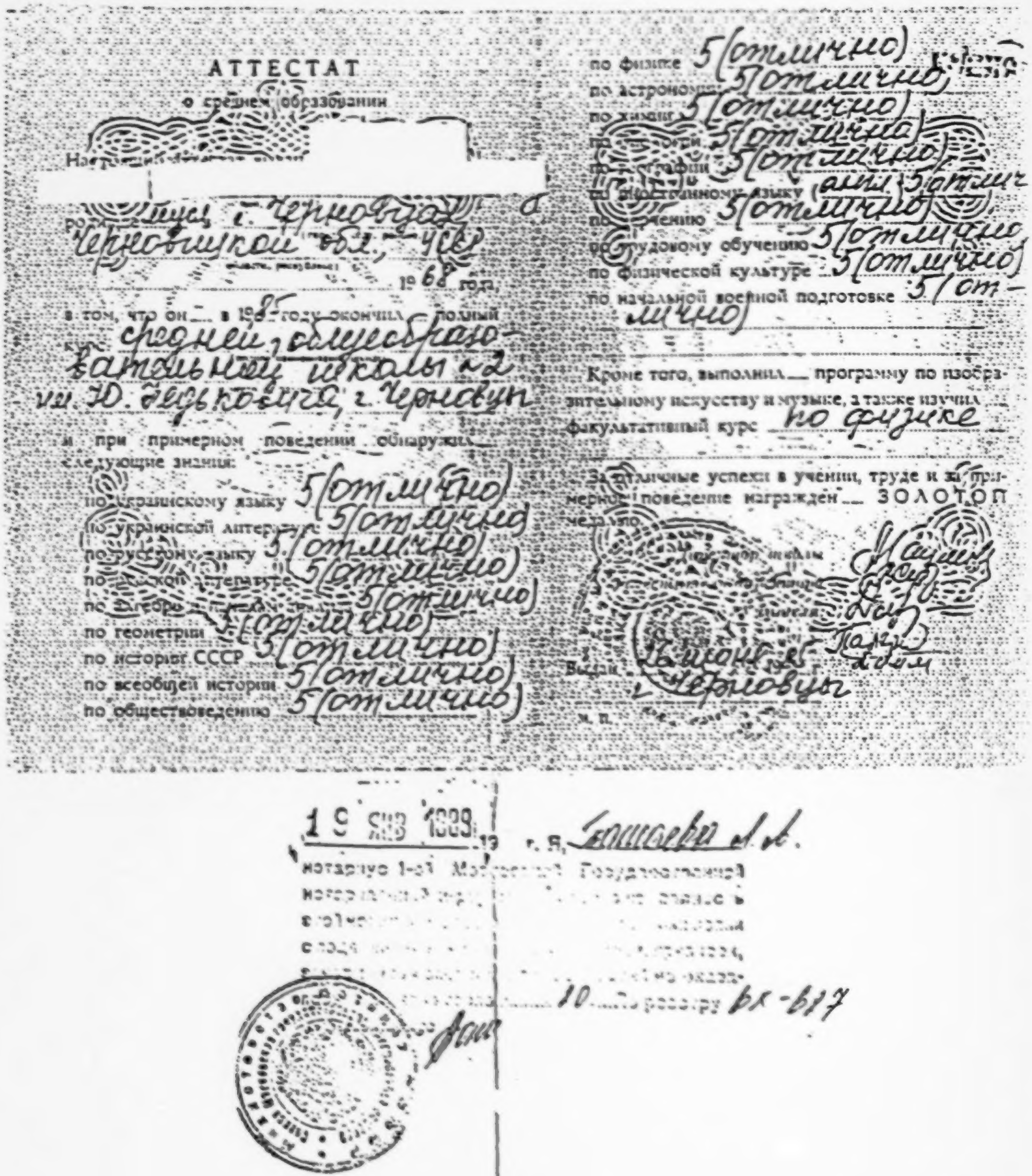
For the excellency of his studies, work and exemplary conduct, he is awarded the Gold Medal.

Director of the School	(signature)
Assistant Director	(signature)
Teachers	(signatures)

Issued on June 26, 1985
City of Chernovtsy

(Official Seal)

D.1a. Certificate of Secondary Education (translation from Russian)



АТТЕСТАТ

о среднем образовании

Настоящий аттестат выдан [redacted]

родившему[illegible] г. Черновцах Черновицкой обл., УССР

(область, республика)

1968 года,

в том, что он __ в 1985 году окончил __ полный курс средней общеобразовательной школы №2 им. Ю. Федьковича, г. Черновцы

и при примерном поведении обнаружил __ следующие знания:

по украинскому языку 5(отлично)
по украинской литературе 5(отлично)
по русскому языку 5(отлично)
по русской литературе 5(отлично)
по алгебре и началам анализа 5(отлично)
по геометрии 5(отлично)
по истории СССР 5(отлично)
по всеобщей истории 5(отлично)
по обществоведению 5(отлично)
по физике 5(отлично)
по астрономии 5(отлично)
по химии 5(отлично)
по биологии 5(отлично)
по географии 5(отлично)
по иностранному языку (англ.) 5(отлич
по черчению 5(отлично)
по трудовому обучению 5(отлично)
по физической культуре 5(отлично)
по начальной военной подготовке 5(отлично)

Кроме того, выполнил __ программу по изобразительному искусству и музыке, а также изучил __ факультативный курс по физике

За отличные успехи в учении, труде и за примерное поведение награжден __ ЗОЛОТОЙ медалью

Директор школы
Заместитель директора по учебной работе
Учителя

Выдан 26 июня 1985 г. Черновцы

М. П.

19 янв 1989 г. Я, [illegible] Л.Л.
нотариус 1-ой Московской Государственной
нотариальной конторы [illegible]
[illegible]
[illegible]
[illegible]
[illegible] 10 [illegible] по реестру Рх-617

D.1b. Certificate of Secondary Education (original document)

BEST COPY AVAILABLE

State Committee of the Byelorussian SSR
for Professional-Technical Education

DIPLOMA D No. 302666

This diploma is issued to (NAME)
that on September 1, 1981, he entered the Gomel
GPTU Middle School for Metal Works No. 6

and that on July 12, 1984, he completed
the full program of the middle professional-
technical school in the area of locksmith-
tool and die making

and obtained general seconary education

By decision of the Examination Commission

(NAME)

is granted the qualification of locksmith-
tool and die making worker

Chairman of the Examination Commission (signature)

Director of the Middle School (signature)

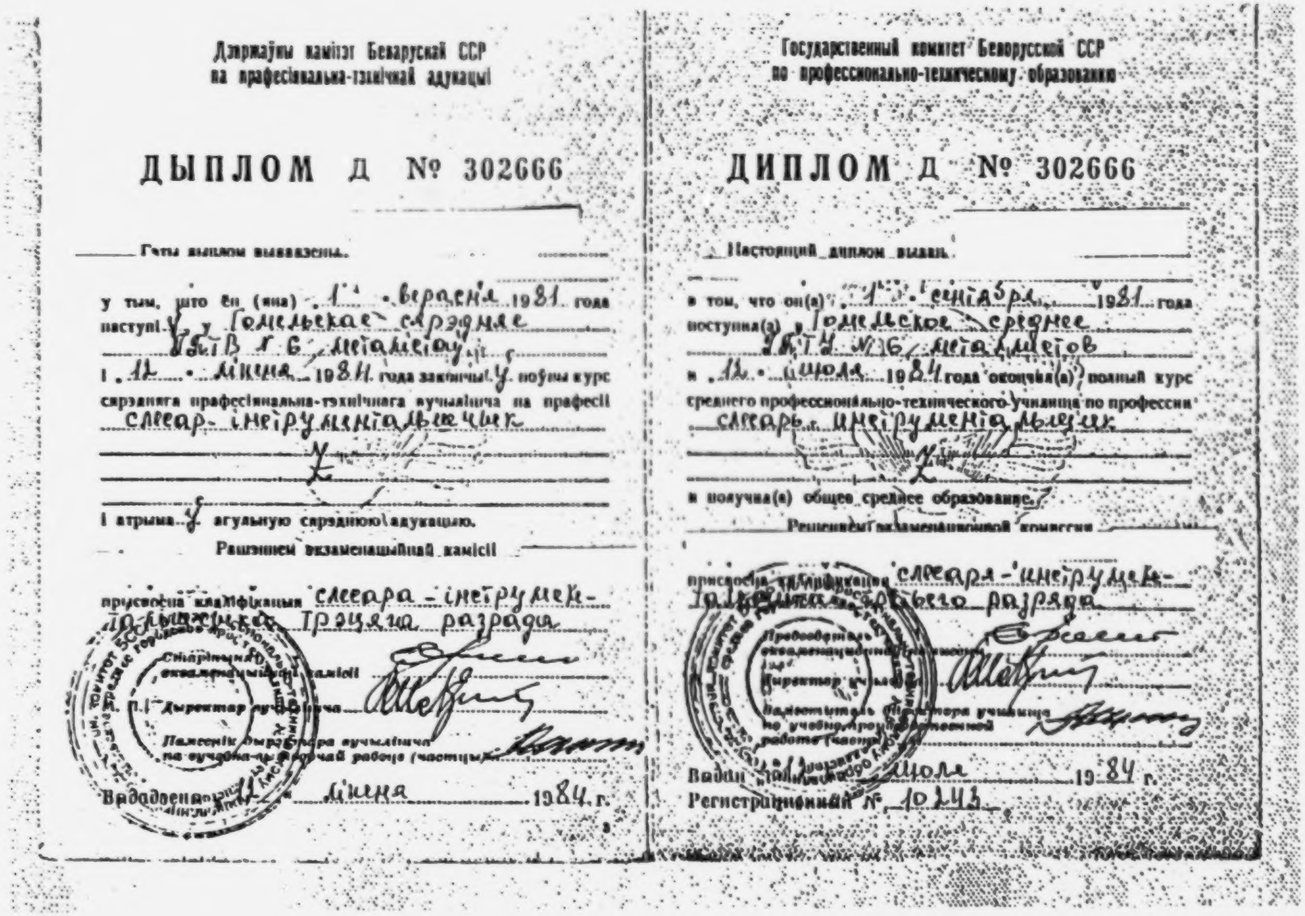
Acting Head of the Middle School Academic and Training
Section (signature)

(seal)

Issued: July 12, 1984

Registration No. 10243

D.2a. Diploma from Technical *Uchilishche* in Byelorussian and Russian Languages (translation from Russian)



Дзяржаўны камітэт Беларускай ССР
па прафесіянальна-тэхнічнай адукацыі

ДЫПЛОМ Д № 302666

Гэты дыплом выдадзены

у тым, што ён (яна) 1 верасня 1981 года
паступіў у Гомельскае сярэдняе
ПТВ № 6, металістаў
і 12 ліпеня 1984 года закончыў поўны курс
сярэдняга прафесіянальна-тэхнічнага вучылішча па прафесіі
слесар-інструментальшчык

і атрымаў агульную сярэднюю адукацыю.

Рашэннем экзаменацыйнай камісіі

прысвоена кваліфікацыя слесара-інструментальшчыка трэцяга разрада

Старшыня экзаменацыйнай камісіі

М. П. Дырэктар вучылішча

Памочнік дырэктара вучылішча
па вучэбна-вытворчай рабоце (частцы)

Выдадзены 12 ліпеня 1984 г.

Государственный комитет Белорусской ССР
по профессионально-техническому образованию

ДИПЛОМ Д № 302666

Настоящий диплом выдан

в том, что он(а) 1 сентября 1981 года
поступил(а) в Гомельское среднее
ПТУ № 6, металлистов
и 12 июля 1984 года окончил(а) полный курс
среднего профессионально-технического училища по профессии
слесарь-инструментальщик

и получил(а) общее среднее образование.

Решением экзаменационной комиссии

присвоена квалификация слесаря-инструментальщика третьего разряда

Председатель экзаменационной комиссии

Директор училища

Заместитель директора училища
по учебно-производственной работе (части)

Выдан 12 июля 1984 г.
Регистрационный № 10243

D.2b. Diploma from Technical *Uchilische* (original document)

BEST COPY AVAILABLE

TRANSLATION FROM RUSSIAN

EXTRACT

Qualification record to diploma No. 302666
(not valid without the diploma)

(NAME)

during the course of his studies at the Gomel GPTU Middle School for Metal Works No. 6

with "satisfactory" behavior

Completed the courses listed below and received the following grades

1. Professional-Technical Track

Course Title	Grade
Production Training	4
Special Technology	3
Access & Technical Measurments	4
Materials & Technial Machines	4
Technical Drawing	4
Principles of Economics Work & Production	3

2. General Education Track

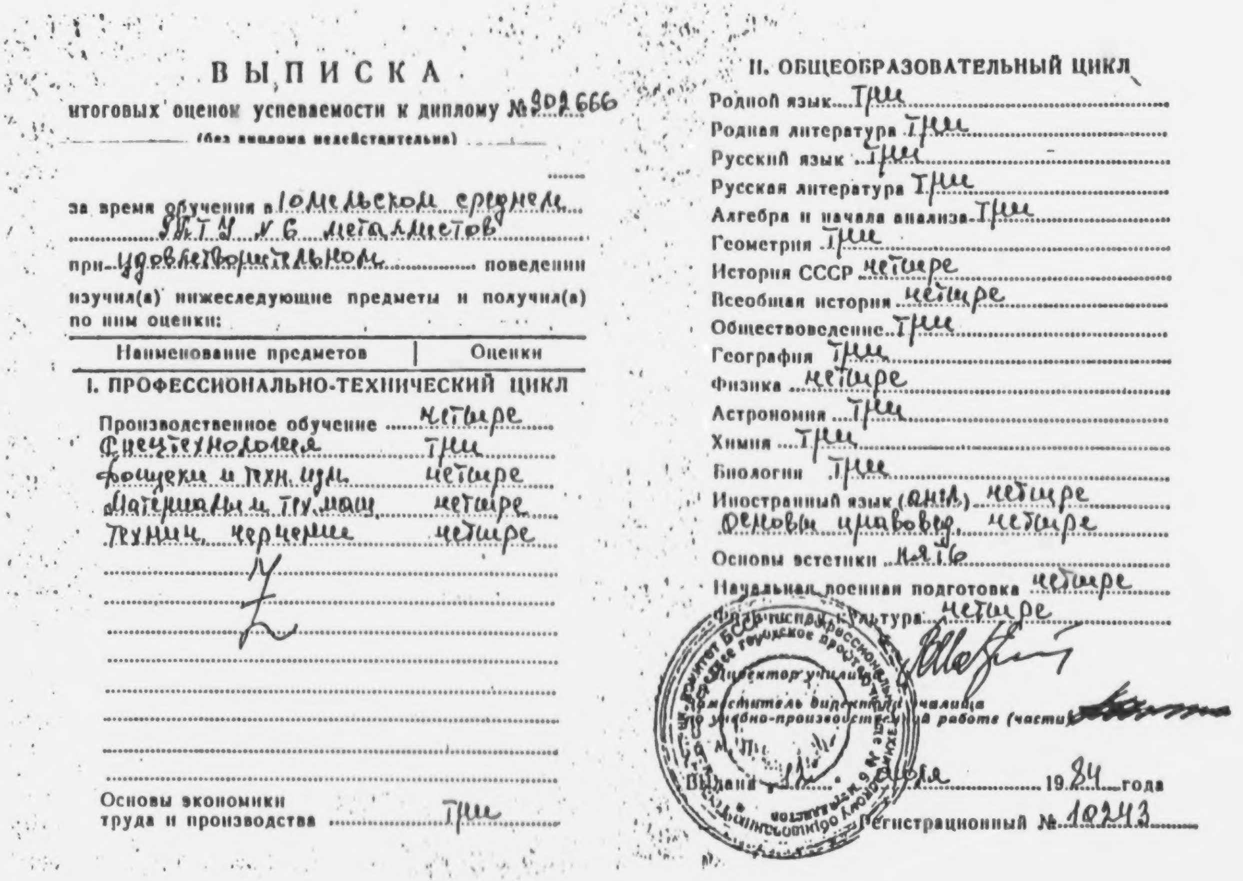
Mother Tongue	3
Native Literature	3
Russian Language	3
Russian Literature	3
Algebra & Beginning Analysis	3
Geometry	3
History of the USSR	4
General History	4
Social Studies	3
Geography	3
Physics	4
Astronomy	3
Chemistry	3
Biology	3
Foreign Language (English)	4
Principles of Law	4
Principles of Aesthetics	5
Basic Military Training	4
Physical Education	4

(stamp)

Director of the Middle School
(signature)
Deputy Director of the Middle School
(signature)

Issued July 12, 1984
Registration No. 10243

D.3a. Transcript to Accompany Diploma from Technical *Uchilishche* in Byelorussian and Russian Languages (translation from Russian)



D.3b. Transcript to Accompany Diploma from Technical *Uchilishche* (original document)

ВЫПИСКА

итоговых оценок успеваемости к диплому № 902666

(без диплома недействительна)

за время обучения в Гомельском среднем ПТУ № 6 металлистов

при удовлетворительном поведении

изучил(а) нижеследующие предметы и получил(а) по ним оценки:

Наименование предметов	Оценки
I. ПРОФЕССИОНАЛЬНО-ТЕХНИЧЕСКИЙ ЦИКЛ	
Производственное обучение	четыре
Спецтехнология	три
Допуски и техн. изм.	четыре
Материалы и тех. маш.	четыре
Технич. черчение	четыре
Основы экономики труда и производства	три

II. ОБЩЕОБРАЗОВАТЕЛЬНЫЙ ЦИКЛ

Родной язык три

Родная литература три

Русский язык три

Русская литература три

Алгебра и начала анализа три

Геометрия три

История СССР четыре

Всеобщая история четыре

Обществоведение три

География три

Физика четыре

Астрономия три

Химия три

Биология три

Иностранный язык (англ.) четыре

Основы правовед. четыре

Основы эстетики пять

Начальная военная подготовка четыре

Физическая культура четыре

Директор училища

Заместитель директора училища по учебно-производственной работе (части)

М. П.

Выдано [illegible] июля 19 84 года

Регистрационный № 10243

DIPLOMA

3T-I No. 635366

The present diploma is issued to to certify that in 1981 he entered the Donetsk Technical School of Industrial Automatization. In 1985 he completed a full course of study at the above mentioned technical school specializing in Automatic Electrical Systems.

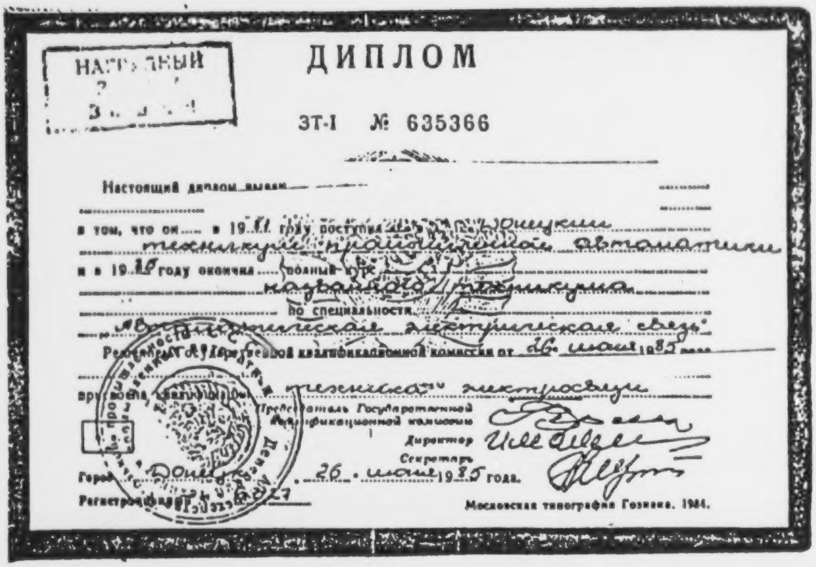
By decision of the State Examination-Qualification Board on June 26, 1985 has been qualified as a Technician of Electrical Systems.

Chairman of State Examination Board	(signature)
Principal	(signature)
Secretary	(signature)

SEAL

Donetsk, June 26, 1985
Registration No. 6327

D.4a. *Tekhnikum* Diploma in Ukrainian and Russian Languages (translation from Russian)



НАРОДНЫЙ

ДИПЛОМ

ЗТ-I № 635366

Настоящий диплом выдан

в том, что он в 19 81 году поступил в Донецкий
техникум промышленной автоматики
и в 19 85 году окончил полный курс
названного техникума
по специальности
"Автоматическая электрическая связь"
Решением Государственной квалификационной комиссии от 26 июня 1985
присвоена квалификация техника электросвязи

Председатель Государственной квалификационной комиссии

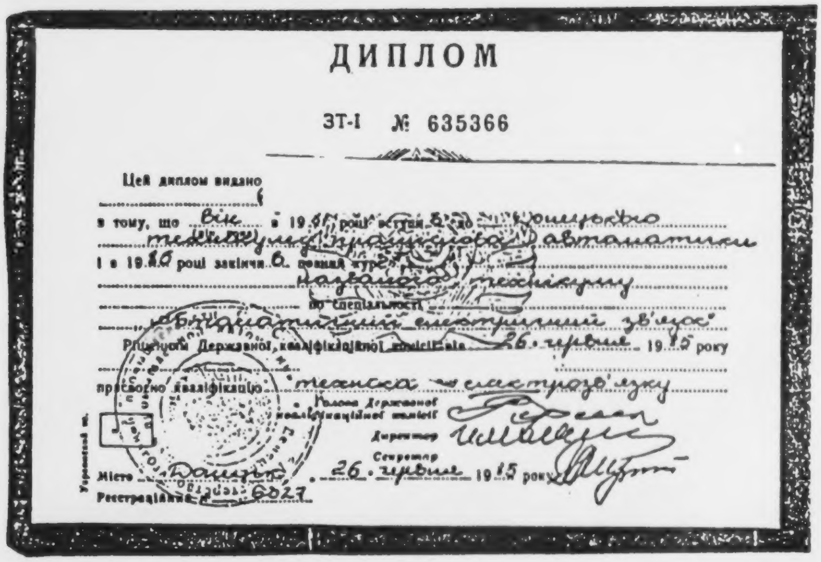
Директор

Секретарь

Город Донецк 26 июня 1985 года.

Регистрационный № 6027

Московская типография Гознака. 1984.



ДИПЛОМ

ЗТ-I № 635366

Цей диплом видано

в тому, що він в 19 81 році вступив до Донецького
технікуму промислової автоматики
і в 19 85 році закінчив повний курс
названого технікуму
по спеціальності
"Автоматичний електричний зв'язок"
Рішенням Державної кваліфікаційної комісії від 26 червня 19 85 року
присвоєно кваліфікацію техніка електрозв'язку

Голова Державної кваліфікаційної комісії

Директор

Секретар

Місто Донецьк 26 червня 19 85 року

Реєстраційний № 6027

D.4b. *Tekhnikum* Diploma (original document)

DIPLOMA

WITH DISTINCTION

#862186

THIS DIPLOMA IS GIVEN TO WHO ENTERED SAMBIR MEDICAL SCHOOL IN 1966 AND COMPLETED PHYSICIAN"S ASSISTANT STUDIES IN 1970.

THIS DECISION IS MADE BY THE STATE QUALIFYING COMMISSION ON FEBRUARY 28, 1970.

WAS AWARDED THE TITLE OF PHYSICIAN"S ASSISTANT

SIGNED:

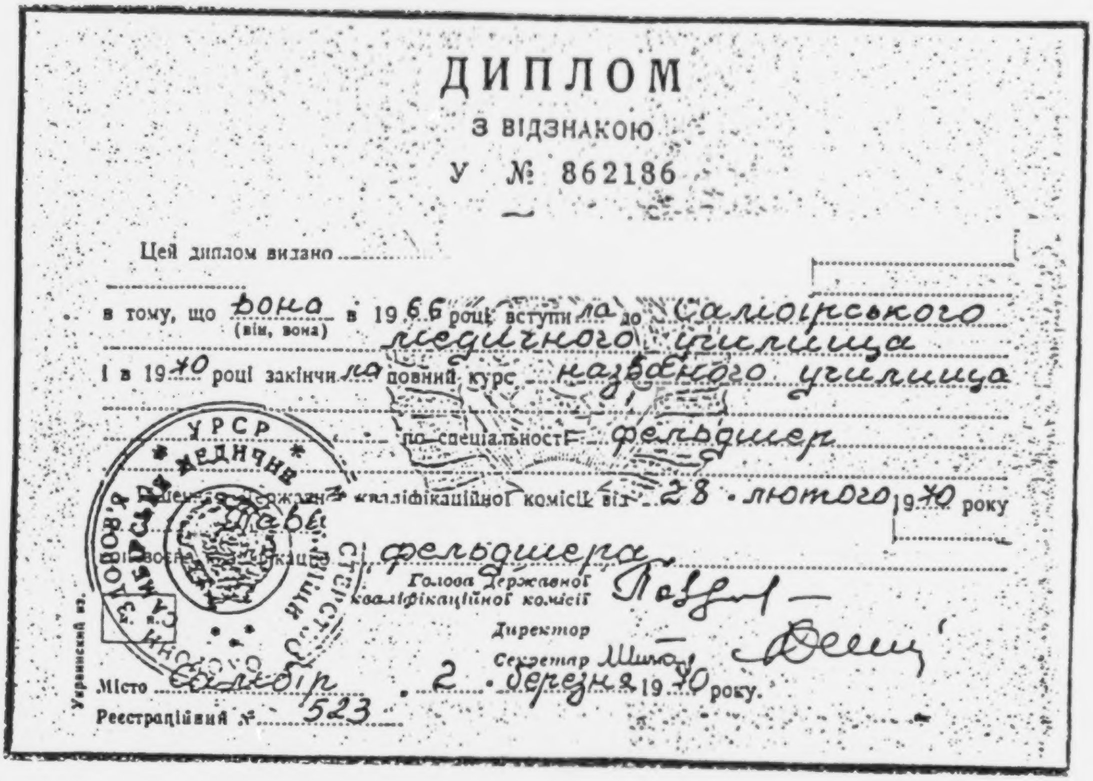
HEAD OF THE STATE QUALIFYING COMMISSION

DIRECTOR
SECRETARY

CITY OF SAMBIR
REGISTRATION # 523

MARCH 2, 1970

D.5a. Medical *Uchilishche* Diploma Issued in Ukrainian Language (translation from Russian)



ДИПЛОМ

З ВІДЗНАКОЮ

У № 862186

Цей диплом видано

в тому, що вона (він, вона) в 1966 році вступила до Самбірського медичного училища

і в 1970 році закінчила повний курс названого училища

по спеціальності фельдшер

Рішенням Державної кваліфікаційної комісії від 28 лютого 1970 року

присвоєна кваліфікація фельдшера

Голова Державної кваліфікаційної комісії

Директор

Секретар

Місто Самбір 2 березня 1970 року.

Реєстраційний № 523

D.5b. Medical *Uchilishche* Diploma (original document)

Notarized copy

USSR

DIPLOMA KT No.702913

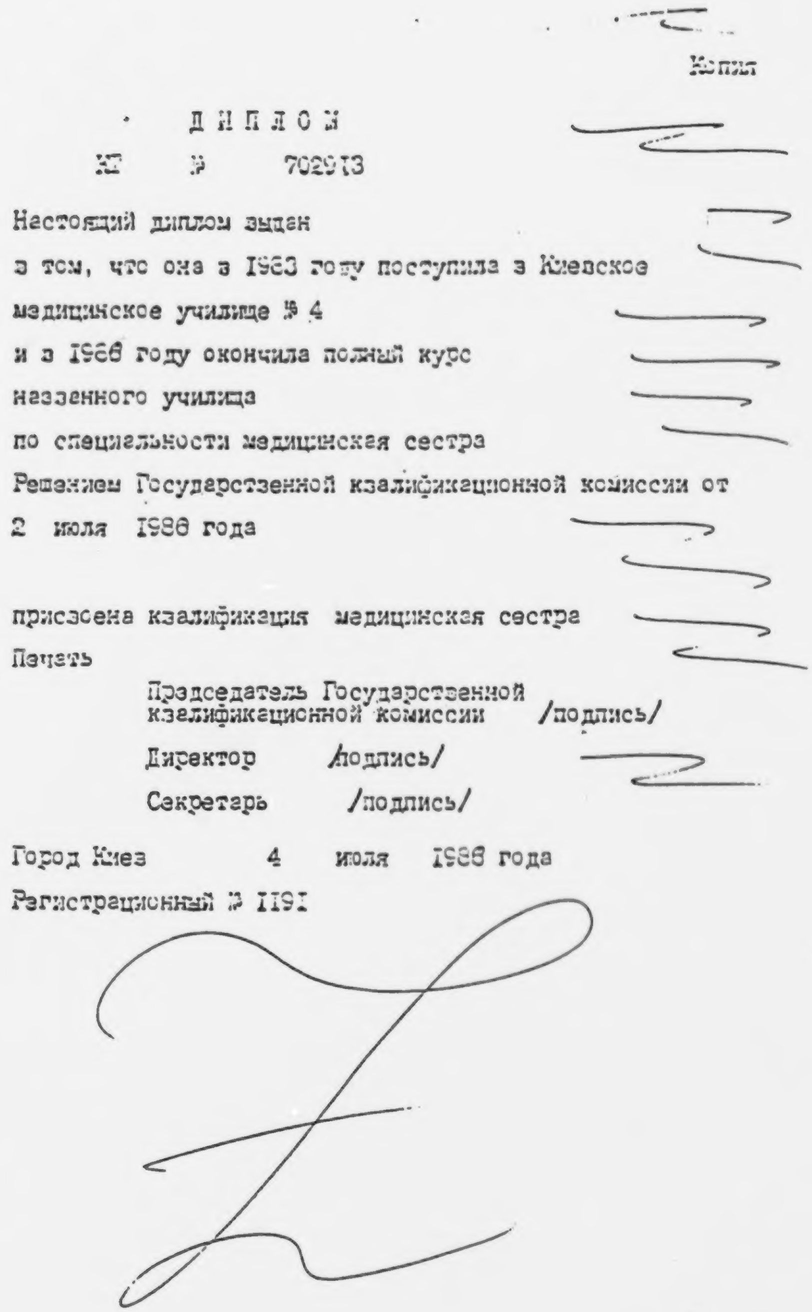
The present Diploma is issued to
to certify
that in 1985 she entered Kiev Medical School No.4
and in 1988 completed the full course
of the said School, specializing in Nurse.
By the decision of the State Qualification Board
of July 2nd, 1988 received the
qualification of the NURSE.

SEAL Signed: Chairman of State Qualification Board
Director
Registrar

City of Kiev, July 4th, 1988
Registration No.1191

City of Kiev, December 1st,1988. I,V.V.Domashenko, State Notary of the 10th Kiev State Notary Office, certify that this is a true copy of the original document, thw latter containing no erasures, additions, cancelled words or other unsecified corrections or irregularities.
Registered under No.2-5548

D.6a. Typed Diploma Showing Nursing Qualification (translation from Russian)



Копия

ДИПЛОМ

КТ № 702913

Настоящий диплом выдан

в том, что она в 1983 году поступила в Киевское

медицинское училище № 4

и в 1986 году окончила полный курс

названного училища

по специальности медицинская сестра

Решением Государственной квалификационной комиссии от

2 июля 1986 года

присвоена квалификация медицинская сестра

Печать

Председатель Государственной
квалификационной комиссии /подпись/

Директор /подпись/

Секретарь /подпись/

Город Киев 4 июля 1986 года

Регистрационный № 1191

D.6b. Typed Diploma Showing Nursing Qualification (original document)

MINISTRY OF HEALTH OF THE RSFSR
N.I. PIROGOV SECOND MEDICAL INSTITUTE

The following

TRANSCRIPT OF ACADEMIC RECORD No. 047747

is hereby issued to [redacted], to certify that she has attended the N.I. PIROGOV SECOND MEDICAL INSTITUTE specializing in Pediatrics from September 1, 1987 to August 28, 1990. While attending this Institute, [redacted] completed the following courses:

No.	Discipline	Hours	Credits	Grades
1	History of the Communist Party in the Soviet Union	106	Passed	Good
2	Latin	70	Passed	Good
3	Physics	152	Passed	Good
4	Anatomy	230	Passed	Good
5	General Chemistry	132	Passed	Good
6	Biology	143	Passed	Satis-factory

Withdrew voluntarily from the Institute by reason of her intention to emigrate permanently to USA under order #356-CT, as of September 12, 1990.

Rector or Pro-rector [Signanure]

Registrar [Signature]

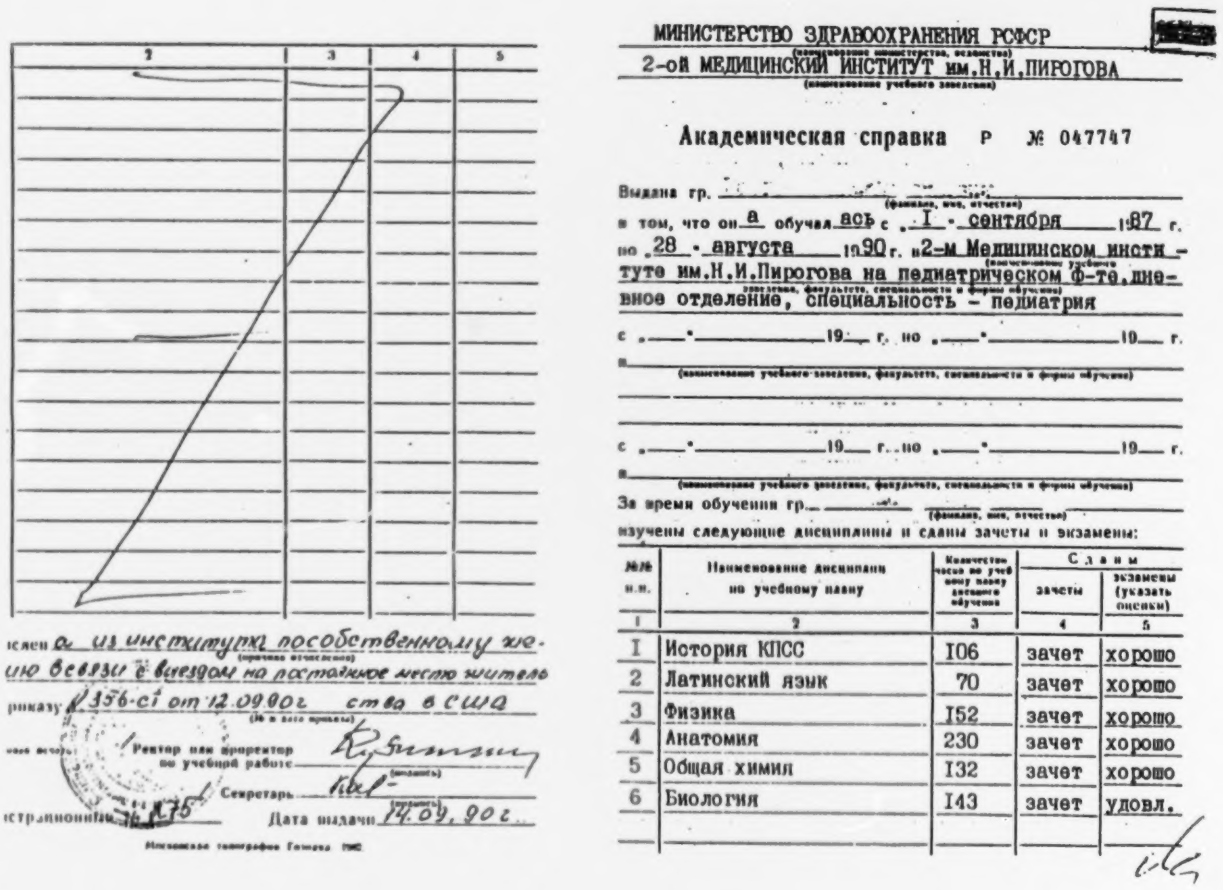
[Inked seal: illegible]

Record No. 275

Issued on: September 14, 1990

D.7a. Transcript Indicating One Semester of Study in a Medical Institute (translation from Russian)

D.7b. Transcript Indicating One Semester of Study in a Medical Institute (original document)



2	3	4	5

ислен а из института по собственному желанию в связи с выездом на постоянное место жительства в США
(причина отчисления)

риказу № 356-ст от 12.09.90г
(№ и дата приказа)

вая печать

Ректор или проректор по учебной работе ________ (подпись)

Секретарь ________ (подпись)

истрационный № 75

Дата выдачи 14.09.90г.

Московская типография Гознака

МИНИСТЕРСТВО ЗДРАВООХРАНЕНИЯ РСФСР
(наименование министерства, ведомства)
2-ой МЕДИЦИНСКИЙ ИНСТИТУТ им.Н.И.ПИРОГОВА
(наименование учебного заведения)

Академическая справка Р № 047747

Выдана гр. ________
(фамилия, имя, отчество)

в том, что он а обучал ась с „I“ сентября 1987 г. по „28“ августа 1990 г. в 2-м Медицинском институте им.Н.И.Пирогова на педиатрическом ф-те, дневное отделение, специальность – педиатрия
(наименование учебного заведения, факультета, специальности и формы обучения)

с „___“ ________ 19__ г. по „___“ ________ 19__ г.

в ________
(наименование учебного заведения, факультета, специальности и формы обучения)

с „___“ ________ 19__ г. по „___“ ________ 19__ г.

в ________
(наименование учебного заведения, факультета, специальности и формы обучения)

За время обучения гр. ________
(фамилия, имя, отчество)

изучены следующие дисциплины и сданы зачеты и экзамены:

№№ п.п.	Наименование дисциплин по учебному плану	Количество часов по учебному плану дисциплин обучения	Сданы	
			зачеты	экзамены (указать оценки)
1	2	3	4	5
I	История КПСС	I06	зачет	хорошо
2	Латинский язык	70	зачет	хорошо
3	Физика	I52	зачет	хорошо
4	Анатомия	230	зачет	хорошо
5	Общая химия	I32	зачет	хорошо
6	Биология	I43	зачет	удовл.

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(TRANSLATION)

DIPLOMA

ЖB NO. 013563

This diploma is given to certifying that in 1977 she was admitted to Yerevan State University and graduated from the complete course of the university in 1982 with a specialty in "Romano-Germanic languages and literature (English)."

By the decision of the State Examining Committee June 17, 1982, was given the qualifications of philologist, teacher, and translator.

Chairman of the State Examination
Committee (Signature)

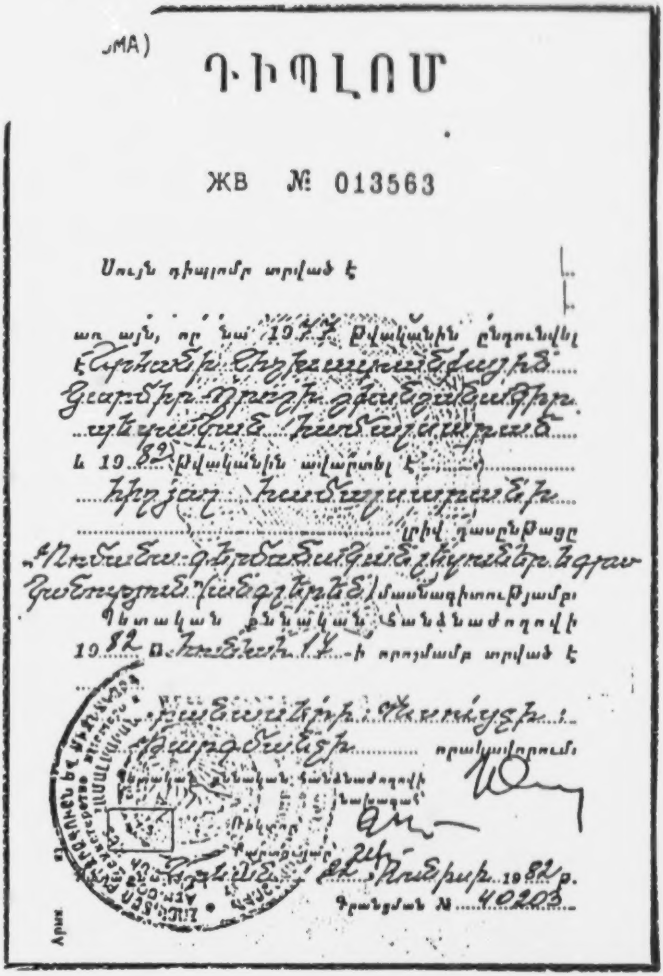
President of the University (Signature)

Secretary (Signature)

Yerevan, June 22, 2982

Registration No. 40203

D.8a. Diploma Indicating Specialty in Romano-Germanic Languages and Literature in Both Armenian and Russian Languages (translation from Russian)



MA)

ԴԻՊԼՈՄ

ЖВ № 013563

Սույն դիպլոմը տրված է

առ այն, որ նա 1977 թվականին ընդունվել
է [illegible]
[illegible]
[illegible]
և 1982 թվականին ավարտել է
[illegible]
լրիվ դասընթացը
«Ռոմանա-գերմանական լեզուներ և գրա-
կանություն» (անգլերեն) մասնագիտությամբ։
Պետական քննական հանձնաժողովի
1982 թ. [illegible] 14-ի որոշմամբ տրված է

բանասերի, [illegible]
թարգմանչի որակավորում։

Պետական քննական հանձնաժողովի
նախագահ

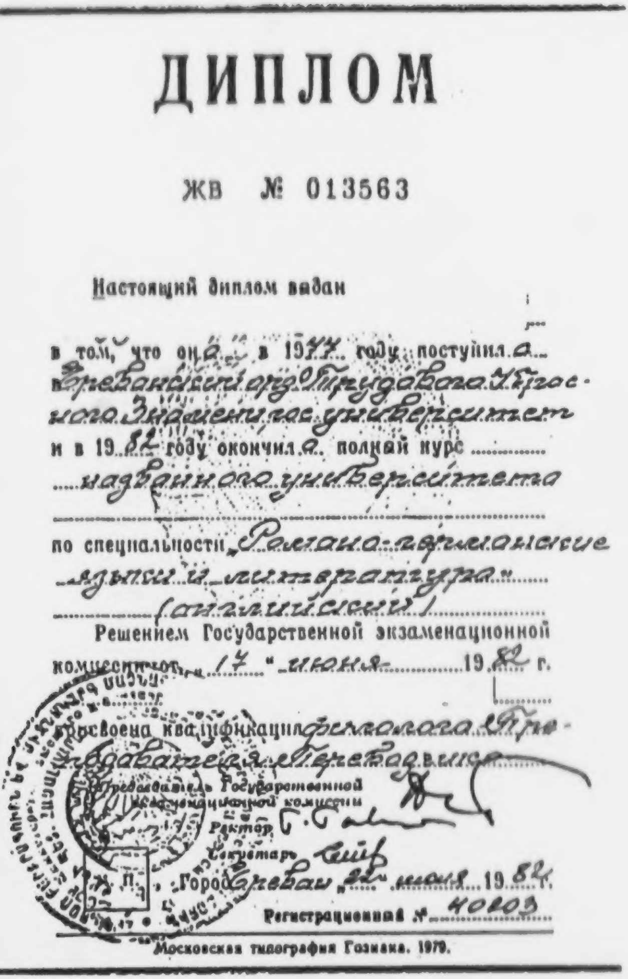
Ռեկտոր

Քարտուղար

[illegible] 1982 թ.

Գրանցման № 40203

D.8b. Diploma Indicating Specialty in Romano-Germanic Languages and Literature (original document)



ДИПЛОМ

ЖВ № 013563

Настоящий диплом выдан

в том, что она в 1977 году поступила в Ереванский орд. Трудового Красного Знамени гос. университет
и в 1982 году окончила полный курс названного университета

по специальности „Романо-германские языки и литература" (английский)

Решением Государственной экзаменационной комиссии от „17" июня 1982 г.

присвоена квалификация филолога. Преподавателя и переводчика

Председатель Государственной экзаменационной комиссии

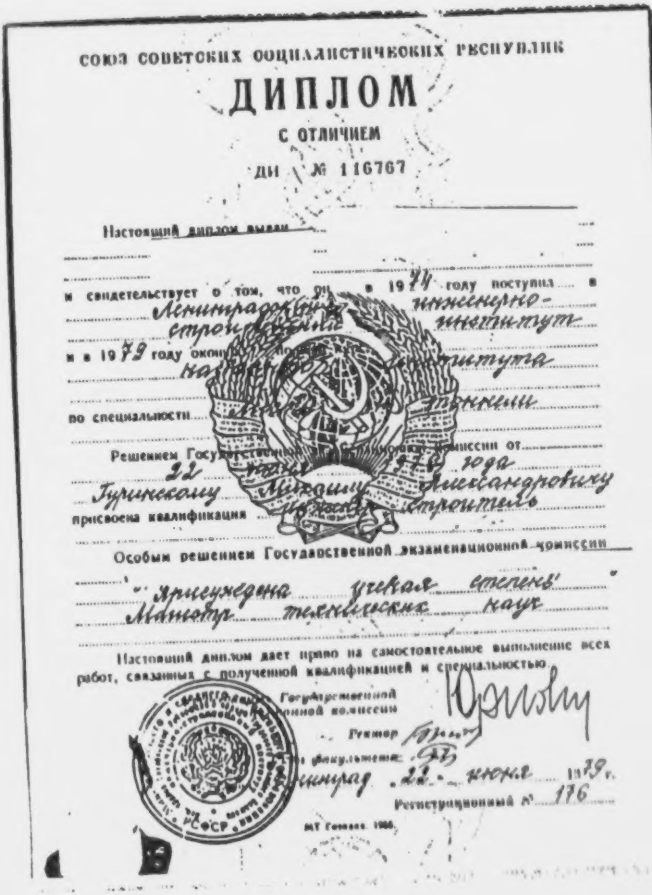
Ректор Г. Г

Секретарь

М. П. Город Ереван „[illegible]" июня 1982 г.

Регистрационный № 40203

Московская типография Гознака. 1979.



СОЮЗ СОВЕТСКИХ СОЦИАЛИСТИЧЕСКИХ РЕСПУБЛИК

ДИПЛОМ

С ОТЛИЧИЕМ

ДИ № 116767

Настоящий диплом выдан ...

и свидетельствует о том, что он в 1974 году поступил в
Ленинградский инженерно-
строительный институт
и в 1979 году окончил [illegible] института
на [illegible]
по специальности [illegible] техники
Решением Государственной экзаменационной комиссии от
22 [illegible] 1979 года
Гуринскому Михаилу Александровичу
присвоена квалификация инженер-строитель

Особым решением Государственной экзаменационной комиссии
"присуждена ученая степень"
Магистр технических наук

Настоящий диплом дает право на самостоятельное выполнение всех работ, связанных с полученной квалификацией и специальностью.

Председатель Государственной экзаменационной комиссии Юрьев

Ректор

Декан факультета

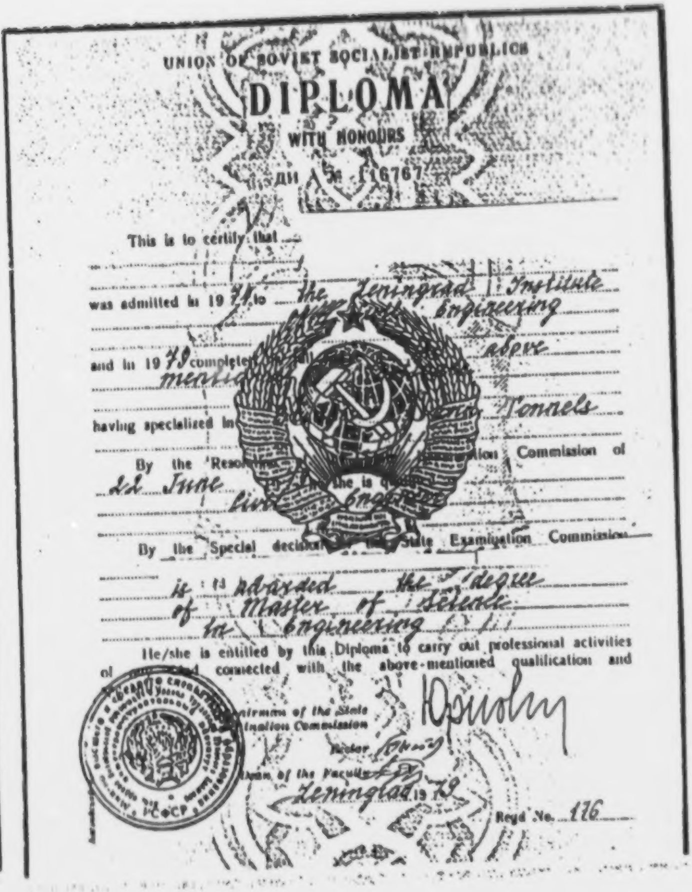
Ленинград 22 июня 1979 г.

Регистрационный № 176

МТ Гознака 1986

РСФСР

D.9. Sample Diploma Issued in English and Russian Languages. Such diplomas are traditionally issued to foreign students in the Soviet republics.



UNION OF SOVIET SOCIALIST REPUBLICS

DIPLOMA

WITH HONOURS

ДИ № 116767

This is to certify that

was admitted in 1974 to the Leningrad Institute [illegible] Engineering

and in 1979 complete[illegible] above mentio[illegible]

having specialized in [illegible] Tonnels

By the Reso[illegible] [illegible]ation Commission of 22 June [illegible] he is q[illegible] Civi[illegible] Engin[illegible]

By the Special decisi[illegible] State Examination Commission

is a awarded the degree of Master of Science in Engineering

He/she is entitled by this Diploma to carry out professional activities of [illegible] connected with the above-mentioned qualification and

[illegible]irman of the State [illegible]ination Commission

Rector

[illegible]ean of the Faculty

Leningrad 1979

Regd No. 176

TRANSLATED FROM RUSSIAN

Emblem

DIPLOMA KV # 416864

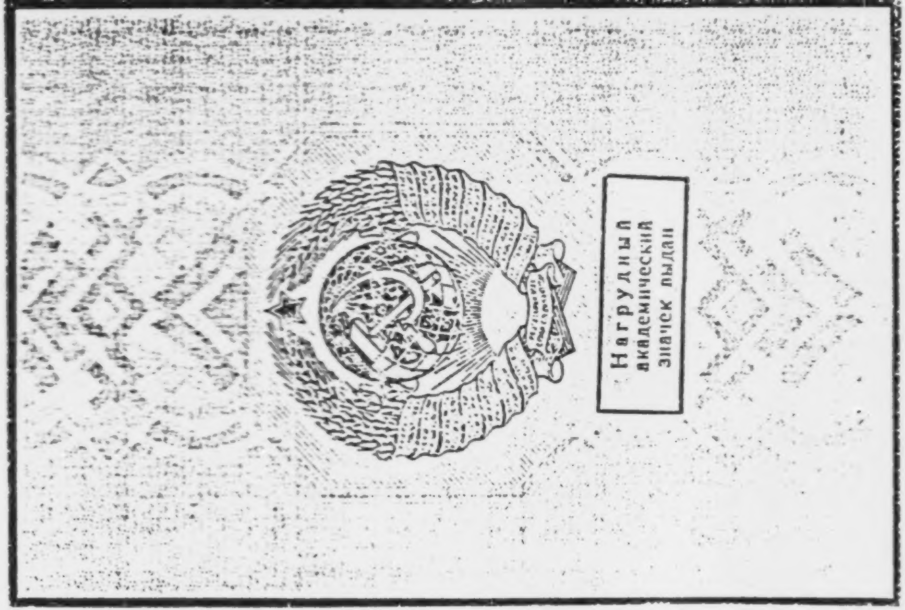
This Diploma has been issued to the effect that entered the Belgorod State Pedagogical Institute named after M.S.Olminsky in 1976 and that on the completion of a full course of his studies in 1983 he graduated from the above Institute specializing in MATHEMATICS.

By the decision of the State Examination Board of July 24, 1983 was qualified as a TEACHER OF MATHEMATICS and awarded a title of a HIGH SCHOOL TEACHER.

Chairman of State Examination Board (Signature)
SEAL Rector (Signature)
Secretary (Signature)

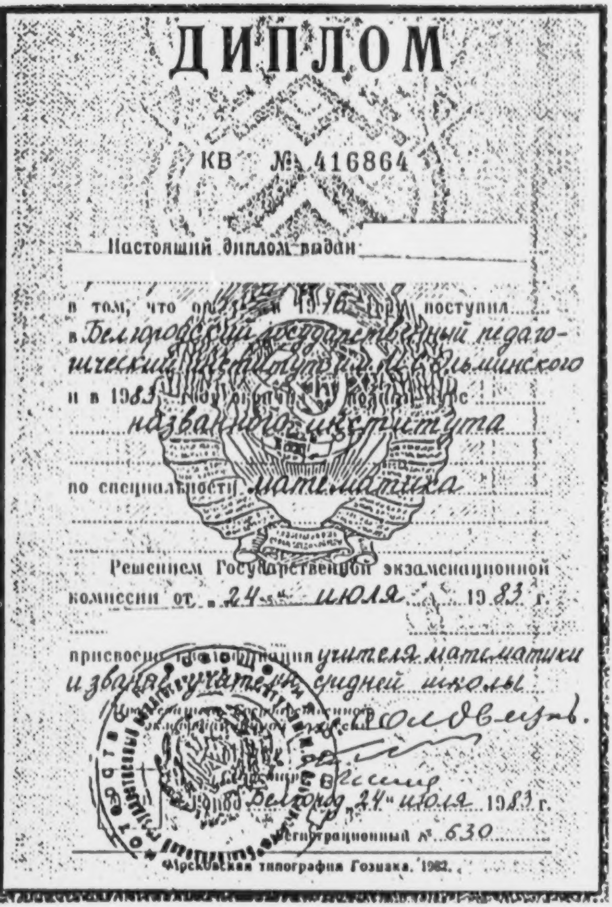
Belgorod, July 24, 1983 Registration # 630

D.10a. Diploma with Accompanying "Addendum to the Diploma" Awarded by a Pedagogical Institute (translation from Russian)



Нагрудный
академический
значек выдан

D.10b. Diploma with Accompanying "Addendum to the Diploma" (original document)



ДИПЛОМ

КВ № 416864

Настоящий диплом выдан [redacted]

в том, что он(а) в 1976 году поступил в Белгородский государственный педагогический институт им. М. С. Ольминского

и в 1983 году окончил полный курс названного института

по специальности математика

Решением Государственной экзаменационной комиссии от «24» июля 1983 г.

[redacted]

присвоена квалификация учителя математики и звание учителя средней школы

Председатель Государственной экзаменационной комиссии

Ректор

Секретарь

Город Белгород «24» июля 1983 г.

Регистрационный № 630

Московская типография Гознака. 1982.

TRANSLATED FROM RUSSIAN

Supplement to Diploma # 416864

TRANSCRIPT OF ACADEMIC RECORD

(not valid without Diploma)

It is hereby certified that during his studies in the physical-mathematical department at the Belgorod State Pedagogical Institute named after M.S.Olminsky to acquire the speciality of a mathematician from 1976 till 1983
passed examinations and tests on the folloiwng subjects:

##	Subject on Curriculum	Hours	Grade
1	History of CPSU	40	fair
2	Marxist-Leninist Philosophy	42	good
3	Basics of Scientific Atheism	8	fair
4	Political Economy	30	fair
5	Scientific Communism	24	passed
6	Foreign Language (English)	60	excellent
7	Developmental Physiology and School Hygiene	16	passed
8	Psychology	34	good
9	History of Pedagogics	16	good
10	Pedagogics	34	fair
11	Methods of Teaching Mathematics	58	excellent
12	Practical Training in Solution of Problems	78	passed
13	Mathematical Analysis and Theory of Functions	286	good
14	Algebra and Theory of Numbers	166	good
15	Geometry	192	good
16	Theory of Probability	32	passed
17	Computing Mathematics and Programming	48	good
18	Scientific Foundations of School Course of Mathematics	54	excellent
19	General Physics	132	good
20	Astronomy	24	passed
21	Special Course	16	passed
22	Special Seminar	14	passed
23	Pedagogical Practice at School		passed
24	Course Papers		good

STATE EXAMINATIONS:

1	Scientific Communism	good
2	Mathematics	excellent
3	Pedagogics with Methods of Teaching Mathematics	good

SEAL

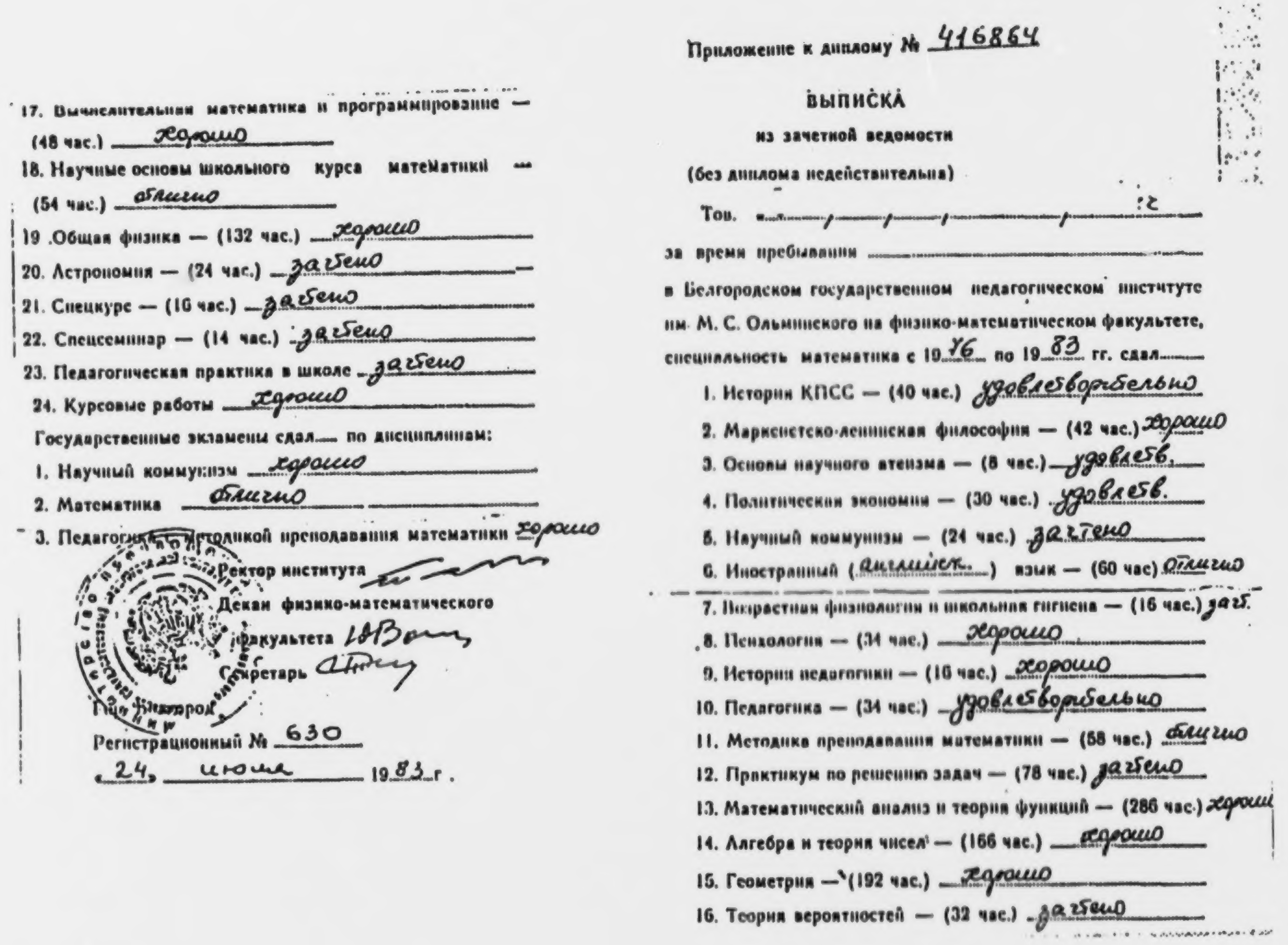
Rector (Signature)
Dean (Signature)
Secretary (Signature)

City of Belgorod, July 24, 1983

Registration # 630

D.11a. Transcript of Academic Record, Supplement to Diploma, Awarded by a Pedagogical Institute (translation from Russian)

D.11b. Transcript of Academic Record, Supplement to Diploma (original document)



Приложение к диплому № 416864

ВЫПИСКА

из зачетной ведомости

(без диплома недействительна)

Тов. ____________________

за время пребывания ____________________

в Белгородском государственном педагогическом институте им. М. С. Ольминского на физико-математическом факультете, специальность математика с 1976 по 1983 гг. сдал ______

1. История КПСС — (40 час.) удовлетворительно
2. Марксистско-ленинская философия — (42 час.) хорошо
3. Основы научного атеизма — (8 час.) удовлетв.
4. Политическая экономия — (30 час.) удовлетв.
5. Научный коммунизм — (24 час.) зачтено
6. Иностранный (английск.) язык — (60 час) отлично
7. Возрастная физиология и школьная гигиена — (16 час.) зачт.
8. Психология — (34 час.) хорошо
9. История педагогики — (16 час.) хорошо
10. Педагогика — (34 час.) удовлетворительно
11. Методика преподавания математики — (58 час.) отлично
12. Практикум по решению задач — (78 час.) зачтено
13. Математический анализ и теория функций — (286 час.) хорош
14. Алгебра и теория чисел — (166 час.) хорошо
15. Геометрия — (192 час.) хорошо
16. Теория вероятностей — (32 час.) зачтено
17. Вычислительная математика и программирование — (48 час.) хорошо
18. Научные основы школьного курса математики — (54 час.) отлично
19. Общая физика — (132 час.) хорошо
20. Астрономия — (24 час.) зачтено
21. Спецкурс — (16 час.) зачтено
22. Спецсеминар — (14 час.) зачтено
23. Педагогическая практика в школе зачтено
24. Курсовые работы хорошо

Государственные экзамены сдал__ по дисциплинам:

1. Научный коммунизм хорошо
2. Математика отлично
3. Педагогика с методикой преподавания математики хорошо

Ректор института

Декан физико-математического факультета

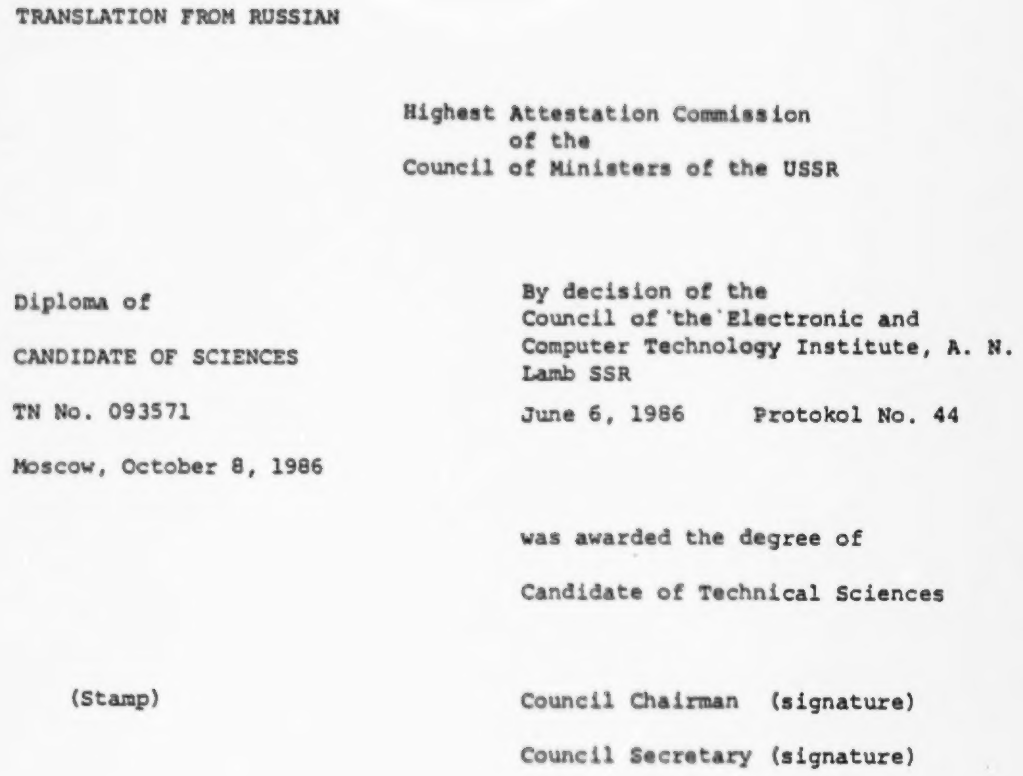
Секретарь

Гор. Белгород

Регистрационный № 630

«24» июня 1983 г.

BEST COPY AVAILABLE



TRANSLATION FROM RUSSIAN

Highest Attestation Commission
of the
Council of Ministers of the USSR

Diploma of

CANDIDATE OF SCIENCES

TN No. 093571

Moscow, October 8, 1986

By decision of the
Council of the Electronic and
Computer Technology Institute, A. N.
Lamb SSR

June 6, 1986 Protokol No. 44

was awarded the degree of

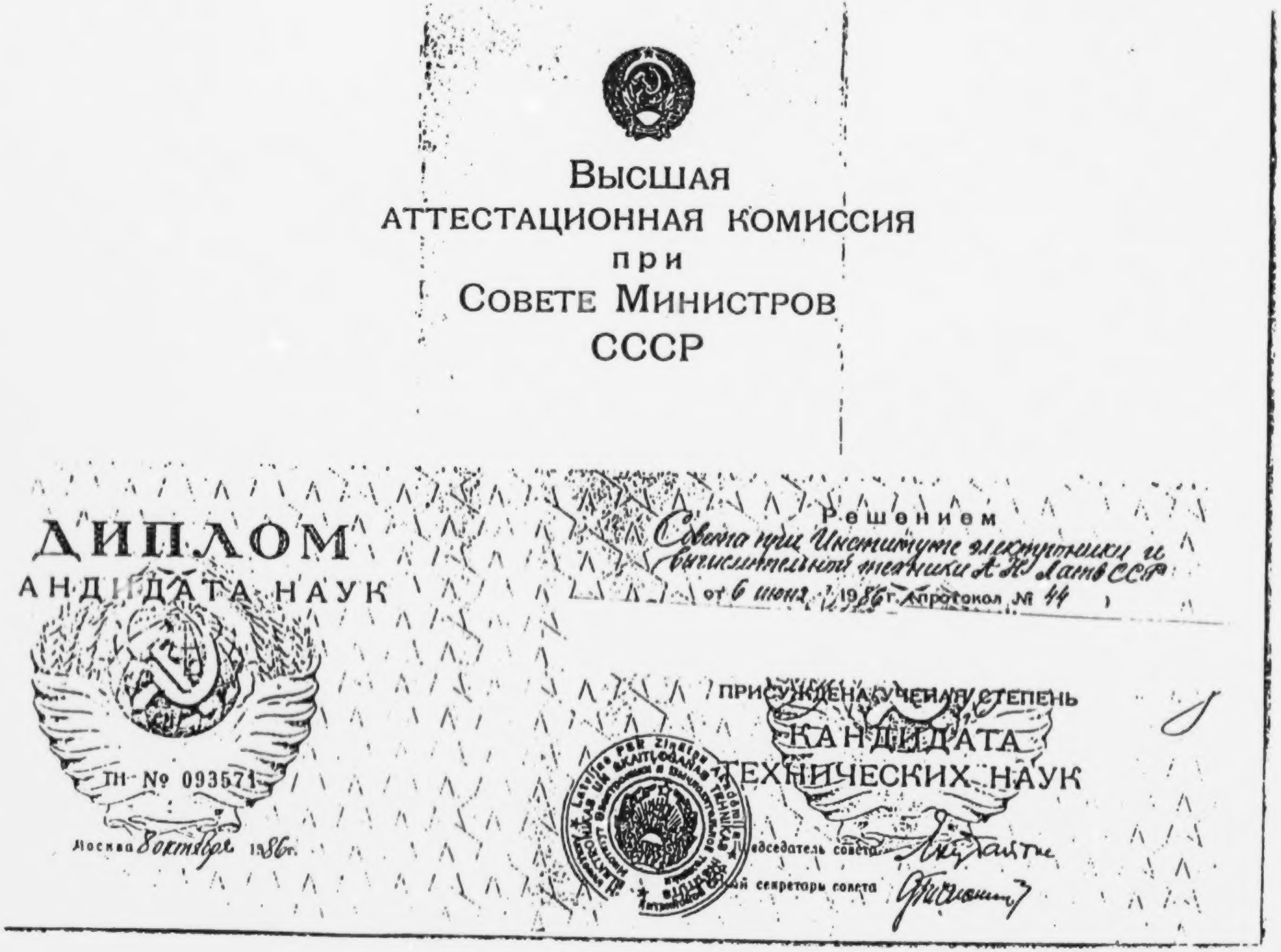
Candidate of Technical Sciences

(Stamp)

Council Chairman (signature)

Council Secretary (signature)

D.12a. Candidate of Technical Sciences Diploma (translation from Russian)



Высшая
АТТЕСТАЦИОННАЯ КОМИССИЯ
при
Совете Министров
СССР

ДИПЛОМ
АНДИДАТА НАУК

ТН № 093571

Москва 8 октября 1986 г.

Решением
Совета при Институте электроники и вычислительной техники АН Латв ССР
от 6 июня 1986 г. протокол № 44

ПРИСУЖДЕНА УЧЕНАЯ СТЕПЕНЬ
КАНДИДАТА
ТЕХНИЧЕСКИХ НАУК

едседатель совета

ий секретарь совета

D.12b. Candidate of Technical Sciences Diploma (original document)

TRANSLATION FROM RUSSIAN

Diploma of

Doctor of Sciences

PS No. 000172

Moscow

(stamp)

By decision of the
Highest Attestation Commission
of the Council of Ministers of the USSR

September 30, 1988 Protokol No. 37g/85

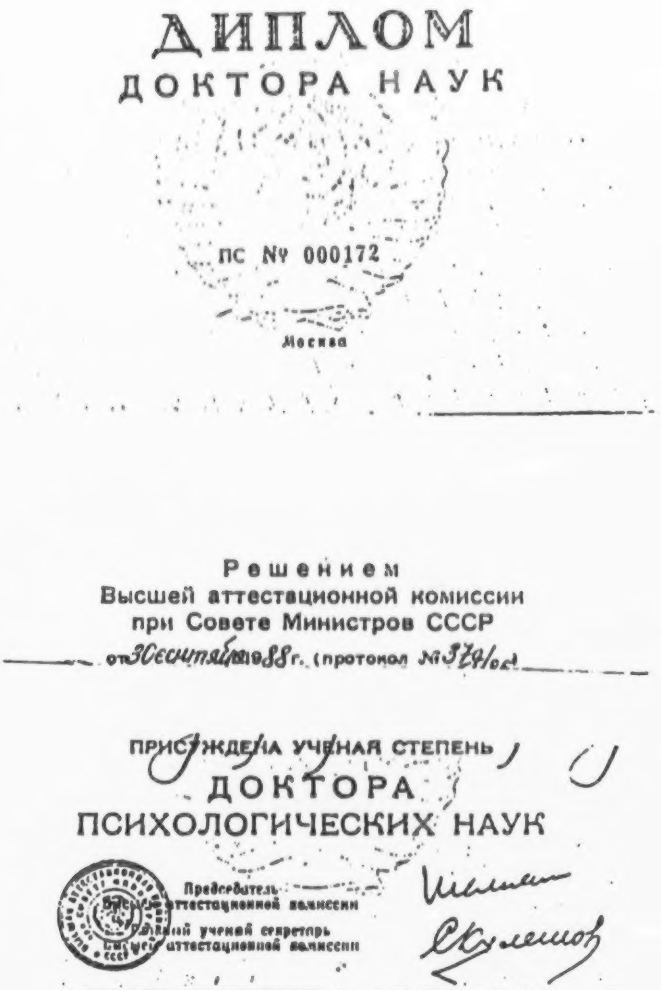
was awarded the academic degree of

Doctor of Psychological Sciences

Chairman of the Highest
Attestation Commission (signature)

Chief Academic Secretary of
the Highest Attestation Commission
(signature)

D.13a. Doctor of Sciences Diploma (translation from Russian)



ДИПЛОМ
ДОКТОРА НАУК

ПС № 000172

Москва

Решением
Высшей аттестационной комиссии
при Совете Министров СССР
от 30 сентября 1988 г. (протокол № 37д/ос)

ПРИСУЖДЕНА УЧЕНАЯ СТЕПЕНЬ
ДОКТОРА
ПСИХОЛОГИЧЕСКИХ НАУК

Председатель
Высшей аттестационной комиссии

Главный ученый секретарь
Высшей аттестационной комиссии

D.13b. Doctor of Sciences Diploma (original document)

TRANSLATION FROM RUSSIAN

Certificate

Professorship

PR No. 001322

Moscow

Decision

Highest Attestation Commission
of the Council of Ministers of the
USSR

December 15, 1978 Protokol No. 39

awarded the academic designation
of Professor
in
Physics and Chemical Plasma

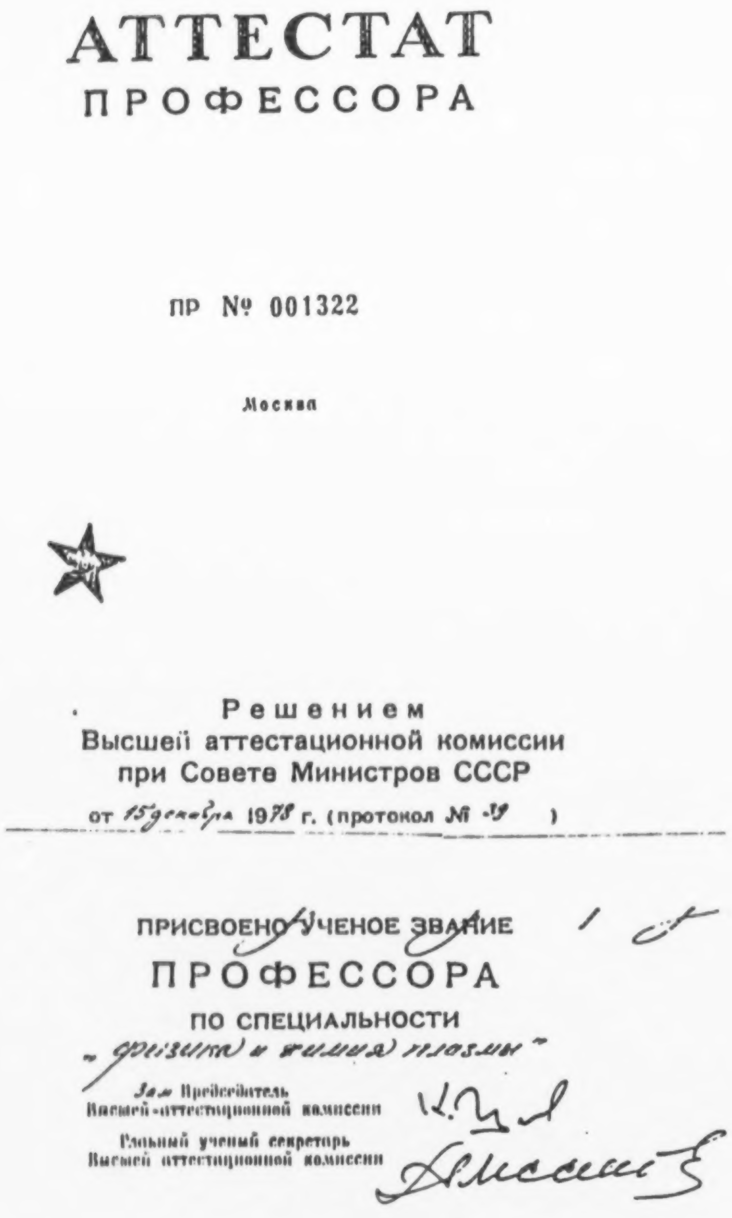
Acting Chairman of
the Highest Attestation Commission

(signature)

Cademic Secretary of
the Highest Attestation Commission

(signature)

D.14a. Certificate of Appointment to Professorship (translation from Russian)



АТТЕСТАТ
ПРОФЕССОРА

ПР № 001322

Москва

Решением
Высшей аттестационной комиссии
при Совете Министров СССР
от 15 декабря 1978 г. (протокол № 39)

ПРИСВОЕНО УЧЕНОЕ ЗВАНИЕ
ПРОФЕССОРА
ПО СПЕЦИАЛЬНОСТИ
„физика и химия плазмы"

Зам. Председатель
Высшей аттестационной комиссии

Главный ученый секретарь
Высшей аттестационной комиссии

D.14b. Certificate of Appointment to Professorship (original documents)

APPENDIX E. Useful Addresses

American Council of Teacher of Russian (ACTR)
Leninski Pr., d. 2, k. 503
117049 Moscow

Association of Universities of the USSR
c/o Moscow State University
Main Building, Office No. 907-908
Leninskiye Gory V-234
119899 Moscow

International Research & Exchange Board (IREX)
il. Gubkina 14, Suite 55
117312 Moscow

Soviet Embassy
Consular Division
1825 Phelps Place, N.W.
Washington, D.C. 20008

Ministry of Health
Foreign Relations Department
3 pereulok Rahmanovski
101431 Moscow

State Committee for Public Education (GOZOBRAZ)
ul. Shabolovska 33
113162 Moscow

USSR Academy of Pedagogical Sciences
Directorate of Foreign Relations
8 Pogodinskaya
119905 Moscow

USSR Academy of Sciences
Foreign Relations Department
Leninsky Propsekt 14
Moscow V-71

USSR State Committee for Public Education
Foreign Relations Department
51 Lyusinovskaya Str.
113833 Moscow M-230

GLOSSARY

Akademia Nauk: Academy of Sciences

Akademia Pedagogicheskikh Nauk: Academy of Pedagogical Sciences

akusherka: midwife

angliiskii: English

arkhitekt: architect

arkhivnaia spravka: archival certificate

aspirant: candidate for the *Kandidat Nauk* degree

attestat: certificate

attestat zrelosti: maturity certificate awarded following completed secondary education

Attestatsionnaia kommisiia: State Attestation Commission

chas: hour/*chasy:* plural

dekan: dean, head of tertiary-level institution's college

den' uchitelia: Teacher's Day, a national celebration on the first Sunday in October

diplom: diploma

diplom ob okonchanii vysshego uchebnogo zavedeniia: diploma of completion from an institution of higher education

dirizher: conductor (orchestral)

dissertatsiia: dissertation, thesis

dnevnoi: day study

doktor nauk: doctor of sciences, the highest academic degree in the Soviet Union

doktorant: doctor of science candidate

doshkolnoe: preschool

dotsent: lecturer

EBM *(elektrovychislitel'nye mashyny)*: computers

facultativy: electives, options

farmatsevt: pharmacist

feldsher: physician's assistant

filologia: philology

fizika: physics

fizkul'tura: physical education

glasnost': openness

god (goda, godu): year

gosudarstvennyi uchenyi sovet: state academic council

inginer: engineer

mashinostroenie: mechanical construction

pribor: instrumentation

sel'skoe khoziastvo: agriculture

stroitel'nyi: construction engineer

sviazi: communication inostrannyi: foreign

institut: institute

institut usovershenstvovaniia uchitelei: institute for in-service teacher training

instituty dlia povyshenia kvalifikatsii: institutes for improvement of teacher's qualifications

istoria: history

kafedry: departments at institutions of higher education

kandidat nauk: candidate of sciences, the first graduate degree

kandidat pedagogicheskikh nauk: candidate of pedagogical sciences, the first graduate degree for teachers

kandidatsky minimum: minimum requirement for the candidate of sciences degree; preparatory study for qualifying examinations before research

karakteristika: character reference

khimia: chemistry/*khimicheskii*: chemical

khorosho: good

kolichestvo: total

Komsomol: Communist Youth League (for ages between 14 and 27)

konservatoria: conservatory

konkursnyi ekzameny: competitive examinations

kursovyi raboty: laboratory, practical work

kvalifikatsiia: qualification

lechebnoe delo: medicine

magistr: master (granted to foreign students for use abroad)

meditsinskii institut: medical institute

medsestra: nurse

metodicheskie kabinety: curriculum centers for teachers

narodnoe khoziaistvo: economy/economics

narodnyi komitet prosveshchenia/Narkompros: National Committee on Education

nauka: science

nauchnyi tsentr: regional educational center

NEP: New Economic Policy (1920-1927)

nepolnaia sredniaia shkola: lower secondary school (grade 9)

neudovletvoritel' no: unsatisfactory

oblast: region

obrazovanie: education, schooling

okonchil: completed/*okonchila*: feminine

orden Lenina: Order of Lenin

orden Trudovogo Krasnogo Znamenia: Order of the Red Labor Banner

osnovy zakonodatel' stva o narodnom obrazovanii: principles of education law

otdeleniia: departments

otlichno: excellent

otraskevye akademii: branch academies

pedagog: teacher

pedagogicheskie chteniia: pedagogical readings for advancing teacher qualifications

pedagogicheskii institut: tertiary-level pedagogical institute, teacher's colleges

pedagogicheskii tekhnikum: pedagogical secondary schools

pedagogicheskoe uchilishche: teacher training school for nursery and primary school teachers

penie: singing/voice

perestroika: restructuring

podgotovitel' nii: preparatory

politekhnicheskoe obrazovanie: politechnic education

polnoe srednee obrazovanie: upper secondary education (grades 10-11)

polnyi kurs: full course of study

postupil: entered/*postupila*: feminine

prikladnyi: applied

pro-rektor: administrative position at institutions of higher education following rektor

PTU *(prof-tekh-uchilishche):* vocational-technical school

rabfaki: worker's schools/faculties

rektor: rector

rezhisser: director, producer

sektsii: sections

shkola: school

spravka: certificate

srednoe obrazovanie: secondary education

srednie spetsialnye uchebnye zavedeniia: specialized secondary educational establishments

stomatolog: dentist

Subbotnik: Saturday workers (usually volunteers)

svidetel' stvo: certificate

tekhnikum: secondary specialized school for technical training

uchebnaia programma: syllabus

uchebnii kabinety: institutional departments or faculties

uchebnyi plan: program of study, curriculum

uchilishche: specialized secondary school

uchitel' : teacher

udovletvoritel' no: satisfactory

vechernyi: evening

vospitanie: education, upbringing

vospitatel': instructor at elementary level

vysshaia: high *(vysshaia matematika*: higher mathematics)

vysshaia attestatsionnaia komissia/VAK: Highest Attestation Commission

vysshoe uchebnoe zavedenie (VUZ): institution of higher education

zachet: credit

zaslushnyi uchitel' shkoly: honored teacher, awarded for excellence in teaching

zaochnyi: correspondence

zubnoi vrach: dentist

zubnoi technik: dental technician

zvanie: professional title (e.g., professor, instructor)

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